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L O N D O N:

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M,DCC,LXXVIII.

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THE ARTIST

ON

EXPERIENCE

IN

THE HISTORY

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OF THE ARTIST

The EDITOR, having been unable to attend to the Correction of the Press, begs the Reader to excuse the following and other ERRATA (especially in punctuation) which he may meet with in the Course of the Work.

VOL. I.

- Page 211 for 'Dourlack' read 'Dourlach'.
 218 for 'squamore' read 'squamosé'.
 228 for 'compresfed, by some very great' read 'compresfed by some very great'
 244 for 'Plethera' read 'Plethora'

VOL. II.

- Page 16 for 'faw' read 'faw'
 19 for 'by the perfuafion' read 'the perfuafion'
 29 in the note for 'Zacutus, Lufitanus' read 'Zacutus Lufitanus,
 31 for 'do to the fight, read 'do the fight'
 32 for 'divestting' read 'diverting'
 33 in the note for 'in the virtue' read 'on the virtue'
 53 in the note, for 'celadine' read 'celandine'
 for 'raspberies' read 'rasberries'
 36 for 'fimilar to these of the case' read 'fimilar to these of the case,
 61 for 'enthusiaft' read 'catholics'
 in the note for 'operation' read 'operations'
 63 in the note, for 'Demenologie' read 'Demonologia'
 for 'Wierns, read 'Wierus'
 65 for 'Reumeu' read 'Reaumur'
 79 in the note for 'are' read, 'is'
 83 for 'adapted' read, 'adopted'
 88 for 'signs' read 'sign'
 102 for 'hia' read, 'his'
 125 in the note, omit the ? after wanted
 131 for 'bound' read 'abound'
 157 for 'effervesce' read 'effervesce'
 'effervescence' read 'effervescence'
 167 in the note, for 'Lolilus' read 'Lolus'
 189 for 'Nothen' read 'Northern'
 193 for 'afeends' read 'ascend'
 205 in the note, for 'ca. efit' read 'calefit'
 208 for 'endcmical' read 'endemia',

+ Some few notes in the course of this work are distinguished by an S; but this was by mistake, all the notes being the work of the same hand.

The Editor, having been unable to attend to the Correction of the Press; begs the Reader to excuse the following and other ERRATA (especially in punctuation) which he may meet with in the Course of the Work.

Vol. I.

Page 101 for "Darius" read "Darius"
111 for "Darius" read "Darius"
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Vol. II.

Page 101 for "Darius" read "Darius"
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B O O K V.

Of GENIUS; and its progress towards EXPERIENCE.

C H A P. I.

Of Genius, in general.

IT is not sufficient to consider objects and individual facts with exactitude; we must likewise be able, to deduce from them, general notions, conformable to the nature of things. For this we must be indebted to Genius.

Amongst the qualities of the mind, Genius seems by one common assent to hold the first place. We find in it something that is original; something that is superior to what is thought, and done, by the generality of men. It raises a man above the level of the vulgar. I understand by Genius, a high degree of refinement, sensibility, and penetration;

or, in other words, an extreme degree of perfection in all the faculties of the mind.

We see poets who seek for the basis of Genius in the strength of their imagination. A poet, of this stamp, has a right to think as he pleases of himself. He may be permitted to fancy, that more grandeur is attached to the writing a verse, than to the guiding an empire; or, that there is more glory in singing an hero, than in being one. It is from such false principles, that so many absurd things have been said on the subject of Genius. Even a certain degree of reason has sometimes been refused it; because men have mistaken the wild fallies and transports of an irregular imagination, for Genius.

If the fire of imagination constituted true Genius, the management of an army, or the state, should be intrusted only to those who have more wit than prudence; more fire than reason; more inconstancy than uniformity; who always see more than it is possible to see in Nature, and, who seek for what is truly great, only by whims and fancies.

Genius, considered in its most favorable light, seems to consist in all the collected powers of the mind. A man of Genius has a vigorous and a lively mind; but as these powers have a tendency only to what is truly great, so they seem to act only as he wills. A strength of imagination, considered in its highest degree, is incompatible with true judgment, and admits of no laws. It will therefore be readily conceived, that judgment, viewed in this light, comes in for as great a share in the formation
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of Genius, as the strength of imagination does. If, for example, we are to consider a chain of ideas, one after the other; to figure to ourselves these notions, with the greatest order and precision possible; to examine things, either synthetically or analytically; and then throwing the eye over the whole, to give it a new form, a new life, as it were, and make it all our own: we may, indeed, do all this, by means of the imagination, but we shall do it unsafely; by means of judgment, we shall accomplish it slowly and surely; but possessing Genius, we shall avoid the defects of both, by doing it quickly and with certainty. This proves, that imagination, taken in its utmost legitimate extent; and the greatest depth of judgment, are required to give true Genius.

I have derived this idea of Genius from the works of the most celebrated artists of Greece. The noble simplicity, the imposing grandeur, to be perceived in those reliques, both in their position and expression, were the result of a powerful imagination, which knew no other limits than those of the most refined judgment. The Abbé Winkelmann, who possessed the rare talent of penetrating to the interior of every object, and to perceive in it a number of things which escape so many others, has remarked, that in many of these reliques, the expressions of the passions, and of the active strength of the muscles, do not partake of the least constraint, or are, in the least, repugnant to truth and nature.

A man of a lively and active Genius, throws his eye on every thing around him, and, with a happy
 B 2 facility,

facility, combines the whole under one point of view; because, he at once embraces the whole, and perceiving the chain and connection of all its parts, deduces from it incontestable truths. Thus, the man of true Genius, perceives and comprehends, in a given time, an infinite number of things, which others, who have less Genius, can either not see at all, or require more time, to see. He connects his ideas in the most ready and just manner, and discovers, by such a combination, a number of important and enlightened truths, which were before concealed.

He, who, though destitute of Genius, has a considerable share of understanding, may, indeed, make such a combination; but he will do it slowly: whereas, the man of Genius, will proceed more rapidly. He should be aware, however, that the more readily and speedily he does this, the more precaution ought to be used. Lord Bacon did well to say, "that Genius did not require wings, but "lead."

It will be understood from what I have said, why there is more difference between enlightened minds and men of no Genius, than there is betwixt certain men and particular races of animals. A little mind, busied about individual objects, and of these, only a small number, will have but very few ideas, notwithstanding his presumption. Being inclosed within a very narrow circle, he seems to possess many advantages over the man of superior and more enlightened Genius. Employed about trifling objects which every one perceives, he is always, as
it

it were, in the centre of his little ideas, and will therefore be less likely to err, in routes which he is every moment traversing; whereas the other, being employed about more numerous and extensive objects, is liable to be deceived if he acts with too much precipitation. This seems to be the reason, why men generally depend the most on what is delivered by persons of confined Genius; whilst they consider, as chimerical, every thing that comes from men of superior talents. It is on the same account likewise, that a man, of moderate talents, is considered as a man of Genius by the greater number of men; whilst the same people look upon a man, of a truly great Genius, as a simple fellow. (a).

(a) In a very elegant little book, lately published by Miss Hannah More, there are some expressions, which are so ingenious, and so extremely applicable to this part of the work, that I beg leave to quote them. "With superficial judges, who, it must be confessed, make up the greater part of the mass of mankind, talents are only liked, or understood, to a certain degree. Lofty ideas are above the reach of ordinary apprehensions: the vulgar allow those who possess them to be in a some what higher state of mind than themselves; but of the vast gulph which separates them, they have not the least conception. They acknowledge a superiority; but, of its extent, they neither know the value, nor can conceive the reality. It is true, the mind, as well as the eye, can take in objects larger than itself; but this is only true of great minds: for a man of low capacity, who considers a consummate Genius, resembles one, who seeing a column for the first time, and standing at too great a distance to take in the whole of it, concludes it to be flat. Or, like one unacquainted with the first principles of philosophy, who finding the sensible horizon appear a plain surface, can form no idea of the spherical form of the whole, which he does not see, and laughs at the account of antipodes, which he cannot comprehend". *Essays on various Subjects, principally designed for Young Ladies.* 8vo.

I place

I place Judgment and Wit between Stupidity and Genius. A man who possesses a just judgment, sees the dependence of an idea when it is shewn to him: a man of Genius, finds it of his own accord. A man of wit, shews that he observes some resemblance in objects that appear distant from each other, and which judgment would not have distinguished without this wit. So that wit supposes a much greater number of ideas and observations, and indeed, a much greater readiness to connect and express these ideas with precision and vivacity, and thus to paint, as it were, objects; whereas, judgment does this, only by means of deep reasoning, in which it very often loses itself.

A man of the best and most solid Genius in Switzerland, tells us, in his moral and political Essays, that Wit and Genius are only two different degrees, of the same readiness to connect the ideas and the images of objects in a new and interesting manner.

It has been said, that truth is produced only by the collision of different opinions: it may be said likewise of Genius, that it never shines forth but when some object presents itself capable of stopping it. All the arts and sciences do not require a particular kind of Genius, although we embrace every object with more or less readiness. He who discovers many truths, not very interesting in themselves; or, a smaller number of truths, that are capable of very extensive combinations, must, of course, have some Genius; but this is not enough to constitute the man of Genius; nor is a man of Genius to be confounded

confounded with a Great Genius, or, in other words, with a Genius.

There are, however, different sorts of Genius, and, of course, different sorts of men of Genius; and likewise, men of great genius, of different kinds and merit. Poets, of the first order, are to be considered as men of great genius; and, indeed, the word *Poet*, signifies *Creator* (*b*). Newton, Leibnitz, Colbert, and Turenne, were men of great genius; and so were Homer, Virgil, Voltaire, and Racine: and yet, Turenne would never have determined the laws of the universe, nor would Newton have gained a battle. Colbert would not have written the *Iliad*; nor Leibnitz the *Henriade*, or the tragedies of Corneille and Racine. There are as many distinctions in Genius, as there are between the voice and the Genius of each individual.

These reflections lead us to perceive three kinds of Genius, very different the one from the other.

1. That which requires more imagination than judgment; this belongs to poets and painters.
2. That which requires more judgment than imagination; this we observe in natural philosophers and mathematicians.
3. That which requires as much judgment as imagination; this is essential to con-

(*b*) The poet's eye in a fine frenzy rolling,
Doth glance from heaven to earth, from earth to heaven;
And, as imagination bodies forth
The form of things unknown, the poet's pen
Turns them to shape, and gives to airy nothing
A local habitation and a name.

SHAKESPEARE.

duct

duct the affairs of government, or an army, and to form the physician. It is well known, that one or other of these sorts of Genius may be combined in the same person. There are some men of great Genius, such as Baron Haller, who seem formed for every thing; who, like Lord Bacon, point out discoveries before hand, or accomplish them like Newton.

I have already observed, in the first chapter of this work, that the mind forms its conclusions from simple and certain principles; or, from complex, uncertain, and indeterminate principles. The first, are those of natural philosophy and the mathematics. The second, those of the art of government, the art of war, and the healing art. In the first, the ideas seem to arise, as it were, naturally and of their own accord; in the latter, they are factitious. One of these arts or sciences will therefore be attained much sooner than the rest.

The merit of labour and study, is not to be compared with happy natural talents. Every thing that requires only memory and application, is not to be considered as a part of Genius, because it may be attained by assiduity. A man, by long and attentive application, may soon acquire the first principles of the mathematics, and even a mediocrity in that science. On the contrary, patience and study will do but very little, and the Genius almost every thing, in an art, which, in the generality of cases, is founded wholly on probabilities; and, in which, the success of an operation will depend on a readiness

ness and faculty of perceiving the highest degree of these probabilities.

Art may be said to be founded, in general, on probabilities, when it affords no incontestable rules, and when no fixed plan can be adopted in every case; when the mind is required to act without being sufficiently instructed, as if it was; when it is alone unable to regulate itself in very variable circumstances; and when it may be said to approach to, rather than, to embrace truth. Politics, the Art of War, and Physic, are of this kind.

That deliberate coolness, without which a man never conducts himself well, according to circumstances, and without which we are exposed to contradiction and imprudence; that strength of mind, which checks the imagination by sound judgment; which, on every occasion, and in every circumstance of life, preserves the mind from wandering, and likewise guards against precipitation and error; which has been denied to Genius, merely because men have attached the idea of Genius only to poetry; this faculty, I say, is especially remarkable in the character of a true politician. Without this sort of Genius, says Mr. Moses, not all Pitt's sagacity, patience and cunning, would have preserved him, unmoved, in the storm which threatened his country.

A readiness to embrace at one glance of the eye all the cases that can possibly present themselves; to discern, with a tranquil mind, that which is best, according to its highest degree of probability; and,

to act with readiness in consequence thereof, is, in the general of an army, the sole work of Genius. Too much slowness in examining things, and too much precaution in the choice of them, are always unsuccessful. Opportunity must be seized the moment it presents itself, otherwise, we may suffer it to escape. This gave the Duke of Guise occasion to say: "*I am determined never to do any thing, about which I hesitate a single moment.*" Age, therefore, is not requisite to be dexterous, in any art or science, which demands more Genius than time. He, who at thirty years of age, is not an able minister, an able general, or an able physician, will never be so.

Youth, if seasoned with reflection; or, a middle age, are either of them, indisputably, very advantageous to Genius. The mind, at this time of life, is not yet enslaved by prejudice. It is only at such an age, that a man can determine himself to quit the common road, and to embrace truth, whether time has given it his sanction or not; and that he learns to know, and to relish it, without difficulty, either from his own countrymen, or from strangers. Jealousy is seldom deeply rooted in us, till we advance farther in life; we abound with hope and expectation; a noble ambition seems to spur us on to seek out, and examine every thing that may flatter the understanding; we even seem actuated by the sole desire of being useful. The soul is then in the meridian of her strength, constantly and uniformly employed, she knows how to avoid the
false

false lights which might conduct her into error; because, it is no irregular fallacy of the imagination that leads her on, but an activity, a coolness of mind, which secure success. A man of Genius, at the age we are speaking of, casts a penetrating regard to the very bottom, as it were, of the sciences. We can compare him only to the eagle, who looks up to the sun with an undaunted eye; both his boldness and his hopes are boundless.

Young, has observed, that truly great men, come compleatly formed from the hands of Nature, as Pallas did from the brain of Jupiter. Thus, Laurence de Medicis, John de Wit, Segnallis, Temple, Richlieu, Alberoni, &c. were politicians from their birth. Xenophon, Phocion, Alexander, Pyrrhus, Hannibal, Scipio, Pompey, Cæsar, Germanicus, Julian, Spinola, Gustavus Adolphus, Condé, Turenne, Mauritius de Saxe, Eugene, &c. were heroes from their cradle. The Genius of all these men, even in their earliest days, seemed to stand them in the stead of experience. It is certain, that with this rare gift of Nature, a person will make a much more rapid progress, even in his early youth, than he will be able, without it, to do in a long series of years. There can be no doubt, but that the illustrious personages I have mentioned, were dexterous commanders, even before they knew how to handle the sword. Young soldiers have often been seen to excel the oldest officers, by mere dint of Genius.

Both Reason and Observation, therefore, prove to us, that Genius, assisted by Experience, will do every thing that is possible to be done; and that a man, who has more experience than another, has not always seen more; but has thought, and reflected on, and examined better, and more minutely, that which he has seen. So that a young man may, on this principle, have infinitely more experience, than one with grey hairs; and be a better physician, than he, who reckons his experience, only by the number of years he has lived.

I have placed the art of war, the art of government, and the art of physic, in the same class; because they depend on the same faculties of the mind, and on the same kind of Genius. A great physician may, in the strictest sense of the term, be said, to possess as elevated a Genius, as a great general: and this is the reason, why it is as rare to find a Sydenham, as a Turenne (c).

In distinguishing and arranging the phenomena of diseases, the mind of the physician aims at discerning their intrinsic and essential qualities, to ascend from the effects to the causes, to discover from these the indications of cure, and the application of suitable remedies; and thus, to ascertain,

(c) The learned Sir William Blackstone recommends the study of the Law to physicians, "to compleat the character of general and extensive knowledge; a character, which their profession, beyond others, has remarkably deserved."

Commentaries on the Laws of England, Vol. I.

by their use, those circumstances of the effects which are obscure, when the possible causes are known. But these intrinsic qualities, are often very difficult of investigation, or very uncertain.

Every disease does not fall under the senses. The complaints of the sick are, in many cases, not sufficient to point out the nature of their disorder. The questions of the physicians produce, perhaps, no light on the subject. In such a case, he can reason only from analogy and probability. How much penetration, therefore, is required in these obscure cases, to come as near the truth as is possible. It may be said, that physic is the art of considering, with rapidity, a great number of events presented to us, by chance, ascertaining the connection they have with each other, and thus, by deducing from them luminous data, passing from that which is known, to that which is unknown. The first of these heads, includes the complaints of the patient; and the latter, the charges that have taken place within him.

The art of combining this infinity of possible events, constitutes the Genius of the physician. The more this Genius is elevated, the better will it discover the affinity of the several symptoms; and thus be enabled to compare, and combine, and examine them with more or less precision. This faculty becomes a talent which passes, as it were, in instinct, and which seems to be the less perceived in proportion, as it is more extended.

All

All this serves to convince us how essential is Genius to the successful practice of physic, and how absurd it is to imagine, that a collection of formulæ is sufficient to form a physician. They, who suppose this, have not capacity enough to discern the difficulties, which every day occur in the practice of this art, and which are infinitely superior to the powers of a moderate understanding. A man of true Genius is sometimes unable to unfold them. There is, indeed, an infinite share of penetration and acuteness required to discern and discriminate so many complex effects of causes, which are very often almost impenetrable. Baron Haller tells us, that Boerhaave, who, even to his 70th year, had, in general, devoted sixteen hours every day to the study of his profession, often complained of these extreme difficulties, and of people who were daring enough to practice, without having ever studied, or reflected in their lives.

Friend observes, that it is in physic we are to see what can be done by a penetrating Genius, and be convinced of the importance of ingenuity and discernment. Can it be possible, therefore, for little minds to succeed in an art, in which the greatest penetration, and the soundest judgment, are so often embarrassed by insurmountable difficulties? Can ignorant men, who are uninformed and destitute of Genius, be supposed to possess the qualities essential to a physician? Can they, who seem never to have been capable of one solid reflection, ever be able to estimate so great a diversity of circumstances, which seem obscure even to the most elevated and improved Genius? and yet, we every day, see ignorant people,
who

who profess to practice, and to understand this important art, without having ever been at the pains to study its first principles. These people, do, indeed, increase in years, but never add to their knowledge. They grow old, like sapless trunks, without affording any good to humanity, and seem indeed to live, only to impose on the credulity of their fellow-creatures. Their whole life appears to be a scene of uniform stupidity.

Every branch of physic, does not seem to require the same Genius. Anatomy, botany, and the knowledge of medicines, seem to require more time than Genius. Physiology, pathology, and semiology, require more Genius than time. The practice of physic requires very little time, but a great share of Genius. With respect to the sciences which have an affinity to each other, such as Physic and Surgery, for example, it may be said, that the latter is to the former, what the Mathematics are to Natural Philosophy. There is hardly any art or science, which rises superior to most ordinary talents, when we learn it only by fixing the senses on objects to perceive them, and when we confine ourselves to the most simple and sensible principles.

A physician is required in a suitable moment, to find out the suitable remedy; and hence, Galen has stiled the physician, *an inventor of opportunity*. A man of Genius will be able to perceive this opportunity, with a very little share of learning, and even without Experience. I formerly knew an ecclesiastic, who joined to a truly philosophical Genius, a very
extensive

extensive knowledge of the languages, and fine arts, together with great taste, and an intimate acquaintance with theology and natural history. He had, perhaps, never read three medical books. I was astonished to hear him speak of some cases he had seen, with a degree of practical knowledge, infinitely superior to that of many practitioners, who are conceited with their pretended Experience. Neither reading, nor application, nor opportunities of seeing, will give this Genius. It depends wholly on an happy organization. Every thing that a physician does without this talent, will rise only to mediocrity. He may attain to great reputation, amongst men of little minds; but he will gain no credit with those of true Genius. The same he acquires, will die with him. However much a man may apply himself to his profession, he will never extend his Genius beyond the sphere to which nature has fixed it. Dubos writing on this subject, observes, "That application may improve, but cannot extend, Genius. Art will enable it only to conceal its limits, and not to pass beyond them".

To pass from the known to the unknown, a man must necessarily think more than he sees; he must be able to figure to himself, that which is invisible, as if he really saw it; he must conclude, from that which is, on that which may be; and hence he will often be obliged to guess, and to make frequent attempts, before he can guess. It is peculiar to Genius, to proceed slowly in doubtful matters, but to run with rapidity through a known track: this is what narrow-minded people call, in the first case, acting with timidity, and in the second, acting with temerity.

Celsus

Celsus was of opinion, that there ought to be, in a physician, a certain quality, which can neither be named nor easily understood. This undefinable somewhat of Celsus, is what constitutes the difference between two physicians, who have had the same education, have seen the same cases, have, in short, had the same opportunities of acquiring knowledge, and yet the one shall infinitely excel the other. It was this something which made the difference, Martianus perceived between himself and Galen, and which induced him to say to him one day, when he met him at Rome, ‘ *I have read the Prognostic of Hippocrates as thou hast, why then cannot I prognosticate so well as thou?*’ This power, that Paracelsus sought for in the planets, and Léntilius in his ointments, was the Genius which neither of them possessed. We hear it objected, however, every day, that the most learned physicians are the least successful in their practice. I shall answer this objection in the course of this work. I will allow here, that in many cases, the most learned physician is of little consequence.

A physician, who has no other erudition than what depends on the memory, may know much, and yet be very stupid: and, as the practice of physic depends wholly on Genius, it will of course happen, that a stupid man, though a man of learning, will be a very indifferent physician. Why do physicians, who are only half-learned, or without science; and, even people, who are in no way physicians, perform every day wonderful cures? Is it, because they have Genius? It is certain, that a number of circumstances may concur

to favour the application of an unknown remedy. But can it be said, that people who administer it at random, and who know not why, or in what circumstances it ought to be given, owe their success to Genius? No, surely. They continue to be as ignorant as the people who employ them.

I am willing to allow likewise, that Genius does not always supply the place of erudition, nor even of experience. But since it clearly appears, that, with the same education, the same knowledge, and the same opportunities of seeing the sick, a physician who has Genius, will be infinitely superior to another who has not; and since, in doubtful cases, many resources are to be derived from Genius, and, that without it, we cannot have experience, surely, a man, to be a great physician, has no occasion to be grey-headed, if he has Genius. A young physician of Genius, who has had a very few years practice, may, therefore, say to one, who has practised fifty years, without Genius, " I am
 " able to shew you, upon occasion, that, which
 " Alexander, at twenty years of age, aimed at
 " proving to Demosthenes, when he said, "*He*
 " *treated me as a child, when I was in Illyria, and as*
 " *a young fellow, when in Thessaly; but I will prove*
 " *to him, in the very bosom of Athens, that I am a*
 " *man*".

Although it is impossible to create the art of Physic, as Pascal did. (d) Geometry, in studying it;
 yet,

(d) This alludes to an anecdote related of Pascal, but which is, by many people, considered as fabulous. Without his having

yet, we may be assured, that the physician is formed by Nature, as well as the geometrician, the politician or the military man. We see the man of Genius succeed, on the first attempt, with the same certainty, as if he had experience on his side. Friend observes, that, notwithstanding all studies, no man will be a great physician, who is not born such in a certain degree. We may read the best medical observations, without being informed of all the difficulties, which will present themselves in our practice; and we every day see, that it is rather by Genius, we judge soundly of circumstances, than by extensive reading.

Ordinary minds proceed slowly in acquiring knowledge; whereas, men of great Genius advance in it, with rapid steps. Prosper Alpini was only thirty years of age, when he returned from Egypt, where he had collected all the materials of his immortal work. Sydenham was born a physician. After passing some time at Oxford, he retired from thence to avoid the troubles of the civil wars. It was about this time, that he formed an accidental acquaintance with a celebrated physician, who attended his brother; and it was by the persuasion of this physician, that determined Sydenham to the

having had any previous knowledge of the mathematics from books, his father is said to have found him, when very young, working with charcoal upon his chamber floor, and in the midst of figures. He asked him, what he was doing? I am searching, says Pascal, for such a thing; which was exactly the thirty-second proposition of Euclid.

practice of physick, in which he afterwards became the rival of Hippocrates. Baglivi, who died at the age of thirty eight, was the restorer of true physick, and the scourge of all the sects that were formed in Europe. From his very youth, he merited his reputation. He only wanted a little more time, to attain the highest degree of perfection, and to perceive, that every man may occasionally be deceived. It was to mere chance, that physick owed the celebrated Boerhaave: he was reproached with Spinozism, and he became a physician. Boerhaave possessed all the qualities essential to the forming a great physician, without knowing it. Sydenham knew that he could become such, but without seeming to value himself the more on the account.

It has already been remarked, long before my time, that the increased number of years and patients, only serve to remove physicians, destitute of Genius, farther from true physick. The more their practice is augmented, the more numerous and considerable are their errors. On the contrary, we observe, that, by Genius, a physician is enabled to penetrate the greatest difficulties, even from his youth; and that, with this to guide and support him, he rises superior to every obstacle.

Such are the advantages and the prerogatives of Genius; and yet, with all these great and amiable qualities to recommend it, I fear, that it is too often overlooked and neglected, in young persons, who devote themselves to the study of physick. I have, in many universities, seen students held in little consideration,

sideration, and who had drawn on them the ill opinion of their examiners, only by a taciturnity, which they very prudently preferred to giving such answers, as they well knew would not meet with the sanction of those, who interrogated them. Instead of supporting the diffidence of a young man of promising Genius, they very often sacrifice him to his own talents; and he is blamed and disgraced, because he has dared to think differently from his masters. A man must possess Genius and talents himself, to discover and protect them in others.



CHAP. II.

Of the manner, in which a Physician ought to conclude from Analogy and Induction.

THE information we derive from each truth we discover, is a sort of twilight, which leads us to the discovery of other truths. To judge soundly of any particular case, with which we are not as yet wholly acquainted, it will be right to compare it with other similar cases; and then, to conclude on that, which is hid and unknown to us, by what we observe of that, which is known.

The affinities, we distinguish by such a comparison, will enable us to perceive the degrees of probability; and these again will, in many cases, lead us to the truth. Moses Ben-Mendel considers probability, as the most necessary of all the parts of our knowledge, because, when taken in its highest degree, with respect to our confined understanding, it has drawn, from sceptics the assent they refused even to truth; and, in many cases, it stands us in the stead of certainty.

The physician may be said to reason from Analogy, when he forms his conclusions from a comparison of the past and the present, and that which is likely

likely to happen. In the observation of particular cases, he has recourse to all the information he can acquire from analogous cases.

Diseases are frequently so obscure, their revolutions so complicated, and their event so doubtful, that a physician is often obliged to guess, before he has had an opportunity of seeing properly; and to hasten to the application of remedies, before he can really know the nature of the disease. In such a case, therefore, he aims at finding out the highest degree of probability; and he does this, by attentively comparing the diseases before him, with others which have afforded similar symptoms. Sometimes he will even be obliged to prescribe a method of cure, only because he has seen it successful in other similar cases.

It seems to be agreed, that men in the earlier ages, must necessarily have reasoned on the following principles. They observed, that they, who died, had been guilty of some irregularity; and to this, they naturally ascribed the fatality of the disease. They remarked, on the other hand, that they who recovered, conducted themselves after a particular manner, or did something they were not accustomed to do in health. Hence they concluded, that in this the patient had found his cure. In the first case, they, therefore, endeavoured to avoid what had seemed to do harm, and they recommended to others, in cases similar to the second, what they had found to be useful; and, in this way, they, by degrees, came to have remedies for particular diseases, when they had repeatedly seen their good effects.

It

It was from considerations of this sort, that the Babylonians and Chaldeans exposed their patients in the streets, that passers-by, who had seen or experienced similar complaints, might inform them how they were cured. This custom continued during many ages in Assyria, and even amongst the Lusitanians and Asturians.

Physic was, in its beginning, so much founded on Analogy, that Melampus did not prescribe hellebore to men, till he had observed, that goats, who ate of it, were purged by it; and the salutary hemorrhages, in acute fevers, seem to have tempted men to the first trial, of what an artificial evacuation of blood would do: and hence the invention of blood-letting. The first operation in this way is ascribed to Podalirius.

Hippocrates was the first, who joined Analogy to a severe logic. Those of the empirics, who openly condemned all reasoning, secretly adopted it.

Analogy certainly affords many advantages, when we submit it to the laws of a severe logic; and conjecture, or form a judgment, on what is similar, only from that, which is evident to our reason and senses. In this way, Analogy will enable us to guess, and even to prognosticate; but we ought to do this, only from the greatest degree of probability, that Analogy is able to afford.

Uncertain marks, together with affinities, which others have not distinctly perceived, are very often the means, by which, a man of Genius passes from
the

the known to the unknown. He examines these marks and affinities, till the knowledge of simple and compound cases, enables him to conclude on the resemblance of the whole, from the similitude of its parts.

The man of Genius alone is able to determine within himself the degrees of probability; and hence it is, that he alone can become a great minister, a great warrior, or a great physician: such a man knows how to doubt, when he perceives, that the reasons, why any particular thing ought to be believed, are of little value; and, on the other hand, he knows how to act when there is greater reason for certainty than for doubt. Men of little minds are not susceptible of doubts of this sort; and they, who do nothing but doubt, are incapable of acting like men of Genius. M. D'Alembert considers the Genius, which distinguishes the truth only, when it flares him, as it were, in the face, as being infinitely inferior to the Genius, which distinguishes it, not only when near it, but perceives it afar off, by its slightest and most fugitive marks. This seems to be the reason, why great mathematicians have never been great physicians.

The advantages of Analogy extend to all objects, that are not sufficiently clear of themselves. A thick cloud is spread over Nature: this begins to open itself, and dissipate, the moment we are able to perceive some of the phenomena, together with their connexion, and causes, so far as we can judge, from the effects. We proceed from these parts that are known, to other new ones,

which present themselves. Analogy, by means of certain general principles, enables us to combine together an infinite number of particular phenomena, that are very distinct from each other. We consider Nature by Analogy, either by discriminating or by comparing the phenomena, when it is impossible to know her internally. The distinctions themselves are not always obscure, but the causes of them are very often so. Lord Bacon observes, that Analogy is the great chain of Nature, and the basis of all the sciences.

These are the ways, by which a physician dives into Nature, and in this manner it is that he applies known principles. Lord Bacon observed, that meat becomes sooner putrid in one cellar than another: and hence, he thought, that this fact might lead us to ascertain the greater or less salubrity of the air, in different places and habitations; and that, from Analogy, we might extend this inquiry to the seasons. Thierry has very properly observed, that every physician will find, in the province he resides in, phenomena, which will agree with what have been seen in other countries, and in different climates. He will therefore naturally say to himself, "If this thing has happened in such a place, surely, from the affinity I see before me, I may be permitted to deduce, from similar principles, similar consequences". From the sensible difference he observes in other things, and which depends altogether on causes, that are inseparable from the climate, in which these effects occur, he will conclude, that they will never be perceived in his country.

It

It is from Analogy only, that a physician can be led to a choice of remedies, in any new or doubtful cases; he will do this, by comparing the disease present, with other known diseases; and then will adopt the same remedies, which have been the most useful in those which are found to have the greatest affinity to it. Experience proves to us, that many diseases, though they vary in their situation, are of the same nature, and agree with each other in their progress and symptoms, and likewise, in their indications and mode of termination, so that consequences may be drawn from the one to the other. This was Baglivi's opinion; and he thought, that such a method might be adopted, not only in diseases of a similar nature, but likewise in many, which essentially differ from each other; and this, by reason of the particular depravation they occasion in the fluids; a depravation, which is really the same in these diseases, however much they may differ in other respects. It may be seen likewise from this, how the physician may choose his remedies in doubtful cases.

Analogy likewise enables us, to discover particular methods, in the most unusual cases. Lord Bacon observes, that physicians ought to aim at exciting, by the movements they are able to excite, other movements, of which they are not the masters. Thus, for example, the sense of suffocation that takes place in hysterical passion, sometimes gives way to the disagreeable odour of a burnt feather.

Many physicians have been of opinion, that the measles may be inoculated as well as the small pox. Dr. Bromm is one of the advocates for this method. Professor Monro ascribes the good effects of inoculating the small pox, to the infection's being carried into the blood by the absorbing vessels without its passing through the lungs: the same writer likewise recommends it to us in the measles, which are so dangerous for the lungs, to collect the miasmata on cotton, and to inoculate with this. Dr. Mutzel, of Berlin, was the first, who thought of inoculating the itch: and Dr. Toggenburgher, a Swiss physician, has made the case, in which this method was tried, the subject of a very ingenious dissertation; of which I have given a second edition. This inoculation, in the space of three weeks, restored the patient from a deep melancholy (e). An Hungarian physician was desirous of inoculating even the plague.

Expe-

(e) Professor Sandifort has given Dr. Toggenburgher's work a place in his Thesaurus. The case is so interesting, that I believe the reader will not be sorry to see it here. The patient was a man of twenty-eight years of age, of a melancholy temperament, and, by trade, a shoemaker. Some family misfortunes, were considered as the occasional causes of his complaints. He became melancholy, averse to his business, and, after some time, had a wildness in his looks, and either gave indirect answers, or kept an obstinate silence. Many remedies were tried to no purpose. He every day grew worse, and more emaciated, and was, at length, placed under the care of Dr. Mutzell, in the royal hospital at Berlin. He was, at this time, inattentive to every thing about him; he sat in bed, with his eyes fixed, and was so great a stranger to hunger or thirst, that three or four days continued abstinence did not excite him to seek for food. His pulse was slow and weak.

Neither

Experience proved, that dropfical people fell into fyncope, if too much water was drawn off, at one operation. Cælius Aurelianus, therefore, invented the use of a bandage, in these cases. Littre has renewed this method, and it has been adopted by Mead. (f) We observe, that scorbutic patients are liable to a total privation of strength, if they remain

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long

Neither external nor internal stimuli seemed to have much sensible effect on him. Whipping with nettles hardly excited any sense of pain : and twenty grains of emetic tartar, produced only one fit of vomiting. Neither blisters ; nor plunging him in cold water ; nor a stream of cold water ; nor plates of ice applied to his head, were able to occasion more than a momentary uneasiness. In this state he continued two years, and it was then determined to inoculate the itch. For this purpose, deep incisions were made in the arms and legs, and the wounds were filled with itchy matter. He did not seem to mind the operation ; but, on the second day the pulse was stronger, and on the fourth, was so much increased, that Dr. Mutzel doubted, whether he had ever felt a quicker pulse. This degree of fever continued during the fifth and sixth days, accompanied by great anxiety and difficult respiration. On the two following days, the fever abated, the skin became moist, and a number of small red pustules were thrown out upon the surface. On the ninth his speech and reason returned to him. He did not seem to know any thing of what had passed during the time of his being in the hospital. In three weeks the pustules were dried away, and he was in perfect health. The inoculation of the itch is, however, no new operation. Zacutus, Lusitanus, and Ettmuller, long ago recommended the wearing an infected shirt, to bring back the eruption of the itch, in cases, where its sudden disappearance had done harm ; and we see several instances of the good effects of such a method, related by writers of the best credit.

(f) None of our English surgeons, I believe, now think of performing the operation of the paracentesis, without making a suitable compression on the abdomen, but they almost all of them

long in a chair, when their disorder is in a considerable degree: and this prostration would prove fatal, if they were not speedily to be relieved, by being placed in an horizontal posture. Reynolds, an English surgeon, very properly concluded, from observations similar to this, that scorbutic and other enfeebled patients, might be relieved by tight bandages, so that every position of the body might become supportable, instead of its being dangerous.

In cases of ascites, the ancients rubbed the patient with oil. Dr. Oliver, of Bath, has lately renewed this method, and recovered by it a number of patients, who were given over. Dr. Tissot approves of this practice, and thinks it will sometimes be of use; but he apprehends, it will be more advantageous in incontinence of urine or diabetes, because the pores absorb too much humidity from the air. He is of opinion, likewise, that cantharides applied externally, would do no harm in diabetes; because they increase the insensible perspiration, diminish the absorption of the pores and add to the acrimony of the urine. Now, it is well known, that in diabetes, the urine is without acrimony, and flows with great ease. There can be no doubt, but, on many occasions, diabetes is occasioned by some disorder in the functions of the skin and the action of cantharides will be likely to remedy this inconvenience.

them place the patient in a chair, during the operation; and even Mr. Sharpe recommends such a position. An horizontal posture, however, will be found to be much more safe and advantageous.

Analogy

Analogy, sometimes, points out improvements, which, at first view, seem to be merely matters of speculation, but which do the less deserve to be tried. Lord Bacon asks, if some instrument might not be contrived, which, when applied to the ears might facilitate the hearing, as much as spectacles do to the sight. Such an instrument is now found.

Dr. Short relates a wonderful history of a man, who became consumptive, and who had his body covered with ulcers. This patient, says he, was perfectly cured, by means of the elixir of vitriol, and the use of the cold bath. Short was desirous of seeking the cause of this cure, in the increased pressure of the air: this, however, can never be allowed; and yet, we find, Short, after having established, as he thought, his hypothesis, go on, to propose a cure for hydrophobia, from Analogy; and this he would do, he tells us, by letting the patient down into the sea, to the depth of ten feet; because then, he supposes, the weight and pressure of the water will be sufficient, by bracing up the solids, to promote and increase the urinary discharge and perspiration, and thus carry off the poison. It is in this way, he explains the good effects of bathing, after the bite of a mad dog, and which seldom fail, according to him, if taken in time, before the dread of water comes on; but the field of conjecture is boundless.

It having been remarked, that a certain lady, who, for wise reasons, had a mercurial plaster on a particular spot, after salivation, being attacked with the small pox, the eruption appeared every where,

where, except under this plaster. M. Malouin, who relates this fact, asks, if it would not be possible, to obviate the small pox by similar means. The experiment has not, indeed, yet been made in its full extent; but a method has been deduced, from this hint, to preserve, at least, the faces of the ladies, from the impressions of the small pox. Dr. Van Rosen covered the face of one of his patients, with a mercurial plaster, and the eruption did, indeed, appear every where, excepting on the face. Dr. Sulzer, of Winterther, has lately made a similar trial, and with the same success. He had the precaution to open the pustules on the arms, thighs, and legs: and, in this indeed, he followed the advice of Dr. Van Rosen, as the surest means of divesting the small pox from the head. This invention is of the greatest importance to the ladies, many of whom had rather lose their life, than their beauty.

Linnæus tells us, that Analogy is very useful to botanists, the observations of affinities often leading them to the knowledge of plants. Tennent found a root (*f*) in Pennsylvania, which the Americans considered as an infallible specific against the bite of the rattle snake. He observed, likewise, that this root was very useful in inflammatory diseases. The physicians, at Paris, were led to think, that the *polygala*, from its resemblance to this plant, might,

(*f*) An Epistle to Richard Mead, M. D. concerning the efficacy of the seneca, or snake root. By John Tennent, M. D. Edinburgh, 1742, 8vo.

perhaps,

perhaps, possess the same virtues; and experience confirmed the propriety of their conjecture.

Linnaeus farther informs us, that all plants, of the same genus, agree in their virtues; and that all these, which are of the same natural class, have a similar affinity. As a natural system of plants, has never yet been established, Linnaeus tells us, we are not to be surprized, if, in certain of his classes, we meet with plants of very opposite virtues; but that it would be possible to arrange them, according to their natural classes, were we previously informed of their virtues from experiments. This is the reason why, he thinks, that, as the *acmella*, of Ceylon, is of so much efficacy in stone cases, it would be worth while, to try the virtues of the *figesbekia*, which is, at present, so much neglected; but which, from its resemblance to the *acmella*, would be likely to be as useful as that is.

On similar principles, Linnaeus is of opinion, that the dark colour of a flower, and, in general, the melancholy aspect of a plant, render it suspicious; and that, on this account, we ought not to eat the black berries of an unknown plant, till we have proved them, by experience, to be innocent. He considers the black colour of all berries, as a mark of poison: there are, however, some exceptions to this rule. The wild mulberry, and myrtle berries, are neither of them hurtful. (g).

There

(g) Linnaeus has laid down many general positions in the virtues of plants, derived from their colours, taste, and smell.

There will, in many cases, be an inconvenience, in concluding from Analogy, when the reasons, which we consider as the basis of a truth, have but little probability: this we call opinion. Thus it often happens, that we mistake probability, for truth; and opinion, for certainty. We either do not properly distinguish the degrees of probability; or else, we see resemblance, where there really is none. Galen has very properly observed, that many things are hid from reason and the senses, by a variety of causes. This is the reason, why every man, who is a friend to truth, ought not to wander, from what is clear and certain, in his search after that which is unknown; nor form his opinion of that which is unknown, from that which is clear. Whoever acts in this manner, will either doubt, as the sceptics did, of every thing that was known,

Thus, a yellow colour, he tells us, generally denotes a bitter taste; as, in gentian, aloes, and celadine.

Red indicates a sour taste; as, in currants, raspberries, mulberries, cranberries, roseberries, and sea buckthorn. Plants that become red in the autumn have likewise a sour taste; as, sorrel, and wood sorrel.

Green indicates a crude alkaline taste; as, in leaves and unripe fruits.

A pale colour indicates an insipid taste; as, in endive, asparagus, and lettuce.

White denotes a sweet taste; as, in white currants, plums, sweet apples, &c.

Lastly, black indicates a harsh, nauseous taste; as, in the berries of the deadly night shade, herb christopher, and others.

With respect to the taste and the smell of plants, he observes, that sapid and sweet smelling plants, are generally innocent; and that such as are nauseous, and of a rank and disagreeable smell, are hurtful. *Philosophia Botanica.*

on account of that which was unknown; or, he will approve, as many of the dogmatists did, of the unknown, from what is known.

Every conclusion, that is founded on Analogy, will be liable to be erroneous, unless it is drawn from the most exact resemblance of the affinities. This is the reason why, we, in vain, expect the same effects to take place, in cases, which are, perhaps, widely different from each other. We must previously be informed, of the properties of objects; and likewise be acquainted, with all the circumstances, before we can be able to compare them. If we wish not to be deceived, we must reason with precision.

The moment we learn from experience, that such or such a thing leads to a certain end, we are too apt to imagine, and often, without reason, that we can attain it in every case. This precipitation leads us only into error. As Man is, in general, rather an animal of habit, than reflection; or, according to Wolf, his prudence consisting wholly in the imitation of the actions of others, or, of his own preceding actions; he does not give himself time to inquire, whether, in the case before him, and on which, he is forming a conclusion, there is not some particular circumstance, which is not to be met with in the other. He says to himself, without hesitation: This method succeeded in a similar case, and ought therefore to do so in this, and in others of the same kind: I get well, without taking any medicine, and I shall always be able to do the same. Leibnitz observes,

that this kind of experience in beasts, stands them in the stead of reason. He might have said the same thing of the greater part of mankind.

Although Physic is really an uncertain art, and physicians, especially if they are men of Genius, are, in a number of cases, more undecisive, than little minds; yet, this science, which Lord Bacon, in his time, considered as the most difficult of all others, appears, however, to be superior to the reproaches of Sextus, Leonard of Capua, and others, who have copied them.

A Genius, of the first order, distinguishes between a certainty, properly so called, and a certainty, from experience. This distinction, which we owe to M. D'Alembert, removes the objections made by Lord Bolingbroke, against Induction; which, doubtless, leads only to a degree of human knowledge, and not to perfect knowledge. We have done every thing in our power, when, in these doubtful cases, we adopt principles, which are founded on experienced certainty; although, the reasonings, we deduce from them, are only probabilities. These probabilities are not to be despised, if they are drawn from experienced facts, to which we have been led by the senses; because, they have then a right to be established, as so many fundamental propositions. A medicine, which has often been useful in a case, and in circumstances, similar to these, of the case before me, will, probably, be useful in this. But, if I have not seen it tried in these cases, my conjecture, will be only a chimæra.

maxima. We ought, therefore, on such occasions, to reason only from experience.

Physic, in its strictest sense, may be said to afford certain principles, if we are careful not to include, what is doubtful and uncertain; or, to confound the false with the true; or, mistake the appearance of truth for truth; or, in one word, if we do not lay to the charge of physic, what ought to be imputed wholly to the errors of the physician.

All that the ingenuity and industry of the best observers, have delivered to us, on the subject of health, and the means of preserving it; together, with all that has been said by them, on the nature of diseases, and the means of palliating or curing them; and likewise, on the qualities and effects of medicines; and, in general, concerning all, that is likely to be useful, or hurtful, to man: all this, I say, is true and certain. Our reasonings are equally certain, when we are sure of not having formed any conclusion, that is improbable or uncertain, from what we see of the disease, and the effects of the remedies, employed in it. It is Genius alone, that can give us this justness of reasoning; and, it is the art, of which I am now going to speak, viz. Induction, which leads to this precision.

We owe all our knowledge to facts, and to Induction, or the art of reasoning, on those facts. We have no occasion to go in search of principles; because these, will seem to present themselves, as it were, of their own accord, if we are capable of properly

properly observing facts. Observations, that are made with precision, will lead to conclusions of equal justness; and these, again, will afford us principles, or propositions, which will require no farther proof.

I have already said, that it is the business of Genius to analyse, arrange, and combine our ideas; and to derive from them, certain conclusions. Lord Bacon pointed out the way, to a knowledge of facts; and Descartes, the way to combine them. The English philosopher shewed us the truth, although it was afar off; whereas, Descartes, in many cases, led us immediately into error. It is, therefore, very easy to form reasonings, when we are possessed of Genius; but, with the same facility, we shall form false reasonings, if we have seen things improperly, or only in part, or not at all.

In order to succeed in medicine, we ought to combine the dogmatical, with the historical part of physic, and the application of facts, with the certain knowledge of them. Hippocrates, long ago, observed to us, that our reasonings, only led us into difficulties and embarrassment, if they are founded, wholly, on chimerical suppositions, and not on the most exact Induction. Lord Bolingbroke considers one error, as a step, which leads us on to another, and so to many more. However just our reasonings and comparisons may be, in themselves, it is certain, they all lead to false conclusions, if the first step is erroneous.

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The explanation of a fact, ought to flow immediately from the fact itself. This explains why, in reasoning from Induction, we ought not to proceed, by comparing ideas with ideas; but ideas, with the objects we are observing. Locke has very well remarked, that, by means of Induction, we arrange those parts of the chain of ideas, which we have discovered, with a suitable precision; and that, by means of this order, the dependence of the parts, and the point of their combination, manifest themselves; and, consequently, the truth at the same time. The mode of reasoning from Analogy, does not lead so far as this by Induction; because the connexion of the affinities is less clear, and the conclusions less certain, than those we infer from Induction. In Analogy, we enumerate only some of the parts; whereas, in Induction, we include the whole.

Induction informs us, therefore, of much more than simple observation. The latter enables us to perceive, only that which is submitted to the senses; whereas, Induction leads us to every thing, the mind is able to embrace. Our diseases seldom fall under the senses; it is, therefore, the business of the mind, to ascertain the causes from the effects, because the senses are insufficient for this; and, in this way, Induction will inform us of that, which could not be acquired from simple observation.

We therefore make use of Induction, when we wish to see farther, than we can do, by means of the senses; when we aim at forming the parts, we collect together into a whole; or when, from a
multiplicity

multiplicity of particular and certain facts, we wish to establish a general truth. In the greater number of sciences, individual observations are the parts of these generalities; and the consequences, which we have derived from them, and which lead to new discoveries, and to the establishment of data, form the whole of these general principles. The more great and important, the enumeration of the parts is, from which the consequences are drawn, the more certain and incontestable will be the conclusions.

Induction may be considered as the path, which leads from the known to the unknown; because, by its means, something new is inferred, and which observation had not taught. By means of Induction, we likewise pass from observations and experiments, to luminous principles; and from these, again, to new experiments, and more elevated truths. In this manner, we are enabled to generalize particular ideas, and, at length, to do this, in the most extensive manner. Induction seems to combine the practical examination of nature, with speculation; and experience, with reason. The more we have collected of exact and perfect observations, and the more we possess of that natural acuteness, which, at once, embraces and discovers the affinity and dependence of an idea, the more perfect will be the Induction, from which we conclude; when we have arranged our observations in suitable order, and put aside all that is variable and uncertain. Induction affords the true means of bringing conviction and certainty to the sciences.

In short, by way of recapitulation, I will observe, that a physician possesses the true Genius of his art, when he does not confine himself to simple observation, nor reasons before he has observed; when he derives his opinions through the readiest channels, and without hesitation; when he combines with the greatest exactitude, the past, the present, and the future; and when he thinks with equal quickness and justness.

After the observation of the phenomena and signs, it is sometimes possible to ascend even to the causes. The physician ought to aim at doing this, by a careful and attentive comparison of the causes, with the effects. If the causes he ascertains, agree with the effect he observes, he then seeks for the method of cure; and, carefully observing the course of the disease, and the effects of the remedies employed, he draws from all these, certain data, which will be applicable to other similar cases.

Induction then is the guide, by which, the man of penetrating Genius, is conducted into the hidden walks of Nature, with more certainty than Analogy; and much farther, than the senses will enable him to do. The whole art of Physic depends on this mode of reasoning; but it is only the man of Genius, who will be able to embrace it,

CHAP. III.

OF THE INQUIRY AFTER THE CAUSES.

SECTION I.

Of the errors committed on this head.

THE Reader will have seen, from what I have said of the talent for Observation, how the physician forms to himself clear ideas of effects. Genius compleats that, which the talent for Observation has begun: it traces the causes by the effects.

We shall be unable to trace the cause from the effect, or to distinguish any order, in a complication of symptoms, unless we possess a certain degree of penetration, necessary to enter into each particular circumstance, and to follow each phenomenon to its most hidden recess. He, who has once perceived, as it were, the foundation of a disease, sees all its circumstances refer to this point, and furnish each of them with some new light; he sees, likewise, each phenomenon assist, as it were, to develop the rest; and in this manner, the whole disease

ease presents itself to him, as the effect of one or more causes; all of which, he ascertains without difficulty. But it is Genius alone that can make these discoveries; without Genius, no man will ever perceive the affinity there is between effects and their causes. It is more especially, by the discovery of the causes, that the Genius of a physician manifests itself.

This readiness to ascertain the causes, constitutes that truly philosophical Genius, which, not satisfied with knowing that things are so, aims at learning why they are so, when it is possible to discover the reason of this. The vulgar, on the other hand, very rarely see things as they really are, and know still less, why they are so.

A physician, who knows not the causes of a disease, or who cannot determine its possible causes, with the highest degree of probability, will never be able to cure the disease. In this knowledge lies the philosophy of physic, and every physician, who possesses it, is truly a philosopher. Hippocrates, therefore, did well to say, that philosophy and physic ought to be combined together. The knowledge of causes, is very justly considered, as the most difficult of all our acquirements. We may judge from hence, how difficult it is to determine the causes of diseases; and, on the other hand, how easy it is to acquire only a false experience, when we are in want of a proper Genius. As it is only, by much the smaller number of physicians, who possess this talent, Stahl seems very properly to have observed, that, of all the

branches of physic, Pathology, or the knowledge of the determinate causes of diseases, and their effects, is the most neglected, and the least known.

A man of a narrow understanding, who is destitute of this truly philosophical spirit, this Genius, which is so essential to the art of physic, will never discover these causes. Confined within the narrow circle of his ideas, he will fall from one error into another. Sometimes, he will mistake the whole of the disease for a symptom, or a symptom for the disease. He will sometimes see, or fancies he sees, causes, which have really no existence; or, he will confound the effects of his remedies with the occasional causes, and *vice versa*: and thus, in his ideas of the disease, and of the indications of cure, he will commit error after error. Now and then, he will have the credit of having atchieved an important cure; although he was, perhaps, called in, to prescribe at a time, when nature was triumphing over the disease, or when it no longer existed. Practitioners of this stamp, are to be included amongst the vulgar. They can never be capable of deducing a just principle, from the best Observations; or, of estimating the nature and influence of the causes, from the effects they excite.

The vulgar examine nothing, and the philosopher is very often asked to explain to them an effect, the cause of which seems naturally to present itself. If the effect is inexplicable, the ignorant think they have a right to despise the man of Genius, in favour of the stupid and illiterate practitioner, on whom they lavish all their praise, because he flatters

ters their prejudices and blindness. These people, however, do not reflect, that it is neither from pride, nor from want of Genius, that the philosopher refuses to explain to them a thing that is incomprehensible. They seem to flatter themselves in seeing persons, who are considered, as they think, on account of their merit, and who are as stupid as themselves. If the philosopher does, in many cases, neglect the examination of causes, it is not because his Genius does not extend itself to every thing, that nature can present to him in his inquiries; but he knows, that as nature diversifies her phenomena *ad infinitum*; and that so far from being able to anticipate or determine the way she pursues, it is not always permitted to the human understanding to follow her.

The vulgar form an improper judgment of causes, because they are unable to develop a compound idea, or to furnish any demonstration; for a demonstration constantly supposes a collection of closely combined ideas, of an immediate affinity with each other, together with many individual conclusions. There will, therefore, be more reflection required here, than in a simple conclusion. Baron Haller observes, that men do not judge erroneously, when the question is only of simple notions, and that no person confounds blue with red; but, that they often mistake in complex ideas, the essence of which consists in the combination of many dissimilar parts. Men are very often unwilling, to take the necessary time and trouble to know the simple parts of two combined ideas, when they form a judgment, because they would think them-

selves

selves humiliated by this. Thus they abuse themselves and others, by pretending to give instructions, before they themselves are informed properly.

Baron Haller has likewise proved, that the Will contributes as much as pride and negligence, to render men liable to error. A man combines, for example, two ideas: such as, those of love and hatred, although absolutely different from each other; and he determines these proposed ideas, not from themselves, but from other ideas he joins to them: but these accessory ideas, so far from forming a part of the two from which we are to conclude, are absolutely foreign to them. A physician, who is loved, has done precisely the same as another, who is hated; and yet, the latter is condemned, while the former is excused.

We shall be equally liable to deceive ourselves, when, before we conclude from two ideas, we wish, that one of them may agree with, or be repugnant to, the other.

The determination of the Will, will always prove an obstacle to the discovery of truth. To will that a thing shall be, because we desire it, is to will nothing, said a philosopher: because, in a thousand unforeseen, and even known cases, we are unable to fulfil any one of our desires; and besides, it is absurd, to will a thing, without knowing the possibility of it: although every man may, as Cicero observed, judge of things in his own way, yet he is not at liberty to connect together contradictory ideas.

Cicero

Cicero expresses himself very forcibly on this subject in another place. " I know not," says he, " how certain people prefer the giving into error, " by a free determination of the Will, rather than " inquire, whether their opinion is well founded. " These people will, perhaps, tell us, that they " have examined things on every side; but I " would ask, if they were capable of such an " inquiry. If they inform us, that it is the opinion of any particular great name they are following, I am ready to answer, that this, perhaps, may be the case; but, at the same time, I " would observe to them, that to be certain, that " this person, whom they quote, is really a great " man, they ought neither to be ideots, nor of " confined understandings, but persons of ingenuity. As to our own part, we think we do " best, in endeavouring to learn the truth without any dispute, and with all the care possible. " Although all our knowledge is often surrounded " with a thousand difficulties; although every " thing is covered, as it were, with darkness, and " there is an extreme weakness in our reasonings, " which has occasioned the most ingenious men to " mistrust their abilities, and despair of knowing " the things they were in search of; yet they did " not stop there, any more than we did. Our aim " is to draw forth truth from the collision of different opinions, or, at least, to approach to it by " these means. There is no other difference between us and those, who pretend such or such a " thing, than that these people never doubt of the " opinion they have embraced; whereas, we acknowledge only a great number of probabilities,

" ties, which we are unable to follow with faci-
 " lity; but without admitting them always as
 " truths. By this precaution, we are at full liberty
 " to judge of things, without being obliged by
 " any motive to adhere to any opinion. It is
 " either from the weakness of age, from complai-
 " sance, or from some prejudice, that these peo-
 " ple give things as truths, of which they know
 " not the least possibility; and that they adhere
 " to their opinions, as firmly as they would to a
 " rock, on which they might chance to be cast in a
 " storm. Persons of this stamp merit no advice,
 " nor have they any claim to be heard. As a
 " celebrated philosopher has observed, it is to no
 " purpose, to answer people who can prove no-
 " thing."

Baron Haller compares our Will to fire, and our
 Genius to light. The former, he says, acts with
 violence; the latter, with mildness. I believe I
 have no occasion to observe, that the Will, some-
 times, leads a man to judge of things, with a most un-
 pardonable degree of effrontery. Baron Haller in-
 formed me, when I was with him at Gottingen, that
 the faculty there had been consulted on the following
 case. A man killed his wife in a garret, and threw
 her out at the window into the street. The coun-
 sellor, who pleaded for the criminal, had the bold-
 ness to say, that his client had thrown her out at
 the window, merely to send her with more speed
 to bed.

But more particularly to our subject. The diffi-
 culty of analysing a compound idea, is the reason,
 why

why the vulgar are confused at the least disease or symptom, the cause of which does not immediately present itself to them. The least resemblance they discover in it of any other case, though it is, perhaps, essentially different from the present, leads them to presume all that has been said of that. They put all the other circumstances aside, because the comparison of all these would be too difficult; and, in this manner, by a chimerical or forced Analogy, is the disease to be defined. In brainless heads like these, strained and distorted ideas seem to hold the place of all others. These people mistake the appearance of truth, for truth itself. Instead of enquiring after all the causes of a phenomenon, they take the least of its parts for the whole. A patient gets well, perhaps, with the assistance of a physician; but not without its being said, on many occasions, that something had been given secretly to the sick; and that, in this remedy, and not in any skill of the physician, the patient had found his cure. This specific had, perhaps, done no harm, only because it happened to be innocent.

Physicians have often been reproached, with not knowing, whether the cure of their patients is to be ascribed to Nature or to Physic. In reply to these objections, I will observe, that they, who are acquainted with no art, and who take a pleasure in decrying those arts and sciences, to which others devote themselves, do not perceive, or, at least, will not seem to perceive, that it is more honorable to cultivate an art well, than it is to censure, without reason, those who practice it. They,

who deliver these objections, commonly know nothing of the nature either of diseases or remedies; and hence, it is much easier for them to ascribe to chance, what is evidently, at least, in the eye of a man of Genius, to be traced to the remedy or the disease.

Sometimes, the multiplicity of causes is so great, that it is impossible even for the most enlightened mind to unravel them all. A physician has done every thing that can be expected from him, when he has traced, with all due penetration and precision, the beginning and progress of a disease; and when he has examined the real and possible causes, with sufficient accuracy, to establish the indication of cure, not from hypothesis, but from Nature. If, after such a scrupulous and attentive mode of proceeding, he fails of success, ought he to be reproached with ignorance, because he knew not the particular character of each cause, amidst the great variety and complication we see so often occur? Who is to be his judge in these circumstances? Shall it be the ignorant vulgar? Yes: it is the vulgar, who claim to themselves a right of determining these matters, of which they have not the least notion. But decisions of this sort, are not always confined to the vulgar. I have seen men of the best parts, give into the same error. A patient dies after a long and incurable disease, and even at an age, which is of itself a mortal disease. No matter. The physician is expected to give relief in cases, which owe their source to insuperable causes. No body ever knows, or seems to know, that a physician is, sometimes, eagerly employed in
researches

researches and combinations, even in cases, which are beyond the boundary of hope. They never once think, of the exhausted constitution of the patient; and they conclude, that the physician suffered him to die, because he knew not the cause of his disease. If these people would calculate the number of years the patient had passed in pleasure and debauchery, and how much these might tend to the abridgment of life; and if they had added to this consideration, the slow, and, consequently, the more dangerous, progress of a chronic disease, surely they would have discovered many reasons to justify the conduct of the physician. I say nothing of many other circumstances of this sort, which might be mentioned. The opinion, which is commonly formed of the good or ill success of a physician, proceeds, in part, from an incapacity to analyse complex ideas, and, in part, from a depraved will. Lord Bacon says, that a politician, and a physician; have hardly any opportunities of giving incontestable proofs of their capacity; that all their credit seems to depend on their success, because there are but few people who know, whether it is the work of the politician, when the state flourishes; or of the physician, when the patient dies.

The most contemptible man breathing, considers a great physician as a stupid fellow, the moment he sees him lose a patient. The wonderful cures that may have been performed by this ingenious man, previous to this, are at once forgotten; because, they suppose, that a physician, who understands his business, ought to suffer no man to die. People seem, sometimes, to exult, when a learned

physician fails in his practice. They are apt to think, that such a one is a dangerous man in his way. Without abilities to discern effects, and with still less capacity to perceive their causes, it is in this manner, that the vulgar decide the merit of a physician, whose conduct, even in the most unsuccessful cases, is a prodigy of skill, and learning, and prudence. The most ignorant physician is not always unfortunate; nor is the most experienced physician constantly successful. The success of a cure, sometimes, depends on an happy concurrence of favorable circumstances.

We shall be likewise liable to mistake the causes, if we aim at judging of things by their event, instead of examining all their circumstances. In the most remote and barbarous ages of Ægypt, physicians were punished or recompensed, in proportion to their success. But there was some exception to this. Punishment was never inflicted, when they appeared to have adopted the best methods, such as were prescribed in the writings of Hermes.

The vulgar, in these times, seem to think, that the cause of an effect, is that which has immediately preceded it. All their logic is founded on this principle: this happened after such a thing, of which this is the effect. The lightning is often attracted by the trees, under which a traveller shelters himself during a storm: therefore, say they, the traveller is the cause of the lightning's falling on these trees.

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The essential symptoms of a disease, are very often considered, by patients of little understanding, as the effects of the medicines they take; and therefore, they sometimes suspect the physician to be the cause of these symptoms. Thus, a patient has a pleuritic stitch; I direct him to be let blood in the morning; at night his pain is increased, and this he ascribes to the bleeding. Another has inflammatory angina, with a smart fever; he sends for me at the beginning of his complaint, he is able to speak, but not to swallow; I order this patient likewise to be let blood, and at night he is unable even to speak. He thinks the bleeding has made him worse. A third patient sends for me, and I find in him symptoms of fever, I prescribe some febrifuge mixture; and, at night, he tells me, that his fever is more violent since he took the mixture. No arguments can persuade these weak heads, that their opinions are false, ill-grounded, and contradictory.

It is well known, that in the colic of Poitou, when the pain in the bowels has ceased, and the patient seems to be better, there very often comes on a palsy of the arms or legs. Dr. Tissot has had occasion to see this colic in Switzerland, and has very well described it. In the place I reside at, it is never seen. If any one should happen to be attacked with it, and I should be called in, I have not the least doubt, but that the palsy which might be expected to take place, would be wholly ascribed to my mode of treatment.

There

There often occurs, in people advanced in years, an inflammation, either of its own accord, or determined by very slight causes; and, in the generality of cases, this inflammation is succeeded by death. The dissection of some of the patients, who have died in this way, has proved the cause of the disease to be an ossification of the arteries, from the foot, even to the great trunk of the aorta. These ossified vessels were, therefore, no longer possessed of their natural mobility; and hence, the causes of inflammation and death were evident; and yet, a physician, who, to a patient of this sort, should prescribe only two grains, a few days before the inflammation took place, would be considered as the cause of his death.

It very often happens, that patients take only half, and sometimes not so much, of the medicines prescribed by the physician. These doses being too small to remove the causes of the disease, the patient becomes worse. I have a thousand times seen this happen, and all the blame thrown on the physician.

All the physicians, as well ancient as modern, who wrote on intermitting fevers, before the discovery of the Peruvian bark, agree in observing, that Tertians or Quartans of long standing, frequently bring on jaundice, glandular obstructions, and dropical affection. Since the bark has been brought into use, the enemies to this excellent drug, seem all to join in attributing to it all these ills: and yet, we every day see fevers of this sort succeeded by similar affections, when the patient has taken no bark.

bark. Werlhoff has seen incurable tympanites follow the cure of these fevers, when no bark has been prescribed, and even when the fever stopped of its own accord. It is well known, that enlargements of the liver and spleen, which have been improperly attributed to the bark, disappear by its means. Brunner, Tosti, Werlhoff, and Wepher observe, that even dropical swellings have given way to this remedy; and yet, there are physicians in Germany, and in other countries, who swear, that the bark occasions obstruction of the liver and dropsy. If a second disease succeeds to the first, the physician, who treated the first, is considered as the cause of this other. The Greeks have remarked, that, in their time, the genus and species of a disease, sometimes changed, either by a new disease taking place, or by the addition of new symptoms to the former ones. They divided the first of these changes into two kinds. In the first, they supposed the change to take place, not from any effort of nature, but merely from some alteration in the nature of the morbid matter. In the second, they supposed a metastasis, or sudden determination of the matter of the disease, from one part of the system to another. We know, that these physicians left Nature to herself, and yet, we find them complaining of the same vulgar prejudices, that are prevalent, even in these times. Hippocrates himself tells us, that ignorant people attribute a secondary disease to the physician, although it is the inevitable consequence of the primary one. According to this venerable ancient, every disease, which is thus the consequence of another, commonly proves fatal: and he gives his reasons for this, by observing, that the
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body is already so much weakened, by the preceding disorder, that Nature will be unable to support the course of this second disease. Aretæus tells us, that little disorders give rise to greater ones, and that these become dangerous, although the others were in no way so. Duretus observes, that the morbid matter of a primary disease, is much milder than that of the second, which is occasioned by a sudden metastasis of the morbid matter; and that the disease is much more supportable, whilst the patient retains his strength, than when this is exhausted. Duretus observes likewise, that altho' every species of dropy is dangerous, yet that it will be much more so, if it succeeds any other inveterate disease, and more especially a Quartan. Huxham remarks, that they who have oedematous swelling of the legs, after having been a long time asthmatic, are probably about to be relieved from their asthma; but that, if the oedematous swelling disappears, the asthma will return again. I have seen this happen. There are similar observations in Baglivi. Notwithstanding all this, however, the cause of these subsequent diseases, will always be ascribed, by the vulgar, to the physician.

If a disease is suddenly succeeded by death, here again the physician is censured; and yet, events of this sort are not unfrequent. They were very familiar to the ancients. We see some, who die apoplectic; others, in syncope; some, from a dilatation, or rupture of the heart or great vessels. We sometimes, and particularly in camps, meet with acute fevers, which prove fatal on the second or third day. According to Boerhaave, a spasmodic
colic

colic, accompanied with inflammation, has carried off the patient within an hour. I have seen children, and even adults, roll upon the ground, in the greatest agony, from a worm colic, and die soon afterwards. The most innocent things, on such occasions, are considered as the causes of death, because they happen to take place just at that period: and this is the reason, why people are so ready to condemn the most ingenious physician in these cases. They never inquire, whether the nature of the disease might not occasion death, as well as the physician's prescription. I do not deny, but that, even a simple purgative medicine, may be fatal to a patient, if administered at an improper time. But I am speaking here of experienced physicians, and not of ignorant pretenders.

All these observations lead to prove, that a physician who undertakes the treatment of a patient, ought to possess courage as well as capacity. He ought to feel himself superior to the prejudices and illiberality, which are so common amongst men, that we find them incessantly applauding, not the industry and talents, but the success, of a physician. He ought to be aware too, that the vulgar are every day praising and rewarding empirics for cures, in which they had no share; whilst they reproach an ingenious physician with the death of a patient, whose days had, perhaps, been lengthened out by his superiority of skill, and who died, at last, because the disease was in its nature incurable. An ignorant practitioner would probably have ended the patient at once.

Men may be said to judge of causes by their successful termination, when they aim at praising one physician more than all others, and endeavour to prejudice one, who does not happen to please them, notwithstanding his merit: and yet nothing is more common than this, amongst people who see too little, to discover the true reasons of the good or ill success of a physician. Malice seems to be the usual companion of Ignorance.

It is well known, that the self-love of men is almost always the principle, on which they found their hatred or their esteem. It is by this principle, they are led to respect or to despise us, and to judge of our talents and merit. To acquire their esteem, we must think as they do, otherwise they immediately feel themselves hurt. As the physician has so often to do with the vulgar, he will be more likely to displease them, than to acquire their good opinion; because they, who are his judges, do in no way resemble him. The merit of a physician, is too often determined by a majority of voices.

The physician Trophilus was one day asked, whom he considered as an accomplished physician? He, who knows how to foresee the possible and the impossible, answered Trophilus. In the barbarous ages, such a physician would have passed for a magician; in these times, he can expect only contempt. This is a learned man, cry the people, there is every thing to be feared from him. It will be to no purpose, that such a physician proves, from the most palpable effects of nature, that he
has

has seen things properly, and acted with judgment; as he is not one of the vulgar, he will be despised. The right of performing cures, would seem to belong only to the ignorant.

Harvey observes, that a compleat apoplexy is either immediate death, or certainly mortal; and, that an incompleat apoplexy is generally fatal; but that, in some cases, it terminates in palsy; the effect of which, is always an infirm state; and sometimes, the patient dies suddenly, at a time, when he seems to be pretty well recovered. Stahl tells us, he had never had the good fortune to cure, either a real apoplexy, or a true hemiplegia; but, that he had seen a number of patients, in whom ignorant practitioners had supposed these diseases, and who had gained infinite reputation by removing them.

Persons, after a violent intoxication, have, sometimes, had slight degrees of apoplexy, succeeded by a paralytic affection of one or other of the arms, which, in a few days, goes off of its own accord. Dr. Tissot has seen slight attacks of a solitary, frequent, and temporary palsy. I have seen, and cured, such a kind of palsy, and even the palsy of a whole limb, only by rubbing it with some spirituous liquor. Such cures, in the hands of pretenders, would have been deemed miracles.

Sometimes, a patient has a fancy to try some particular remedy, and gets well; he immediately ascribes his cure to this, and, from that moment, pretends to determine the cause of his complaint,

by the effect of a remedy, of which he knows not even the nature.

It now and then happens, that a patient falls into the hands of an ingenious physician, who ascertains the nature of the disease, points out its causes, and establishes the curative indications: this deserving man is, perhaps, dismissed, and an ignorant practitioner called in, who, by chance, succeeds, in prescribing a remedy suitable to the indications which the other had determined, and it is this second who cures the disease; he alone can be supposed to have known the causes, because he removed them. An ignorant physician will be always free from censure, if he advises a remedy, which has been proposed by some person as ignorant as himself. If it does not succeed, it is the fault of the patient: the ignorant fellow, who proposed the remedy, is pleased to see it authorized by the physician; and the physician, on his side, triumphs in spite of his stupidity, because he is sure not to meet with contradiction from people of this stamp.

A true physician, on the contrary, is sure to read his condemnation in his prescription, if these ignorant people disapprove it. If he succeeds, they attribute all the effects of his medicines to nature; and if he fails, or has not all the success he expected, he is said to have known nothing of the disease. It is certain, that one unsuccessful remedy given to a patient, without the advice and consent of his ignorant friends, will do more harm to the reputation of a physician, than an hundred unfortunate cures will do, in which he shall have contradicted

tradicted nobody, or in which he shall have prescribed only such medicines, as were agreeable to the vulgar.

It will appear from hence, how arbitrarily men judge of causes, and how extensive is the influence of malice, prejudice, and passion. - Shall it be said, after all this, that the voice of the people is a legal suffrage? I have been convinced, by my own experience, of the falsity with which men judge of facts, when they know nothing of their causes. I was once accused of having killed a child, which had been killed by its mother three weeks before I opened it: it had been discovered only by the crows that were attracted by its putridity; it happened, that two or three drops of blood flowed out when I examined the body, and there were people ready to believe, and to say, that I had killed it. On another occasion, I was accused of poisoning a patient. The case was as follows. A man of some rank, was attacked with pleurisy, which manifested itself by an acute pain at each respiration, cough, fever, and a considerable spitting of blood. I gave him a mixture, that I have a thousand times employed, with the best success, in the same disease, and which was composed of Nitre and Camphor, a little Cinnabar, Syrup and Water. The phial happened to break upon the stove on which it stood, and the medicine, as a proof of my iniquity, left behind it a brown spot, which this respectable man and his wife shewed, during many years afterwards, to all their visitors, and spoke of it, in their own way, in all companies. The cause of all this rancour arose, from my having refused
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to prescribe the medicines proposed by the wife ; a lady, by the bye, who has taken it into her head to ascertain the merit of all our physicians, although her system of physic is confined to her cookery book.

I have been accused likewise of destroying a lady, of whose case I shall speak hereafter ; because this lady appeared, after death, to one of her friends, with my medicines in her hands, and said, that I had killed her.

It would be endless to enter into all the errors of superstition. Magicians, Sorcerers, and Apparitions, will always abound in countries, where they are authorized by Religion ; or, at least, where the people find an interest in believing them. These errors, however, are not confined to any particular country. I have seen Protestants a thousand times more superstitious, than the most zealous enthusiasts ; they were constantly referring to prodigies, the causes which they could not understand. In general, wherever there is no philosophy, whether it be in Switzerland, in Germany, in England, in France, in Spain, in Italy, or in China, there will be spectres, witches, and, in one word, superstition.

The very learned and ingenious professor Meyer, of Halle, has attacked these prejudices, at their very source, in a little work, which is extremely interesting and entertaining (a). Another writer

(a) The title of the work here alluded to is, "*The Operation of the Devil on the terrestrial Globe.*"

has

has written a book, in a very different stile, but very instructive, in its contents, entitled, *The philosophy of the Distaff*. This work may be read to advantage, by those, who have not Genius enough to comprehend the reflections of the celebrated professor of Halle. He relates above six hundred examples of different superstitions, which are almost universally prevalent at this day (b).

All these idle notions arise, from an incapacity to examine the true causes of an effect, and thus to distinguish that, which is supernatural, from that which is not. And professor Meyer does well to observe, that a deficiency of reason is the cause of every prodigy. That much pains and labour are required, to discover the true causes of these events; that many observations must be united, and many experiments made; and that, to all these, there must be added a degree of learning and penetration, with which few men are endued. Without all these it is impossible to distinguish the affinity there is between an actual effect, and its supposed natural, or supernatural cause; or to know, whether we do

(b) Our celebrated countryman, Mr. Reynolde Scot, of Scot's Hall, in Kent, ought not to be forgotten here. This ingenious man ventured to oppose the doctrine of Witchcraft, at a time, when it was so universally believed, that even bishop Jewel, in a sermon before queen Elizabeth, prayed God they might "never practice farther than upon the subject". And king James I., in his preface to his *Demenologie*, observes, that his book was written "chiefly against the damnable doctrine of Wierns and Scot; the latter of whom is not ashamed, in public print, to deny, that there can be such a thing as Witchcraft, and so maintains the old error of the Sadducees, in denying of spirits."

ascribe

ascribe to absurd causes, what is the effect of a very simple one, or what, on the other hand, is even impossible. A man must be well versed, in the knowledge of natural things, before he will be able to determine what is, or is not, founded, in the essence of things themselves, whether it be in particular, or in general.

There are really many effects, the causes of which are so hidden, that the most penetrating mind discovers nothing: and yet, the ignorant multitude, says Mr. Meyer, see these causes in charms, and other the most ridiculous things, although these causes are very often in the thing itself, supposing it to be true.

Every time the people observe a change, of which the cause is concealed from them, but which appears with something else at the same time, they consider this last phenomenon as the cause of the first. They do not seem to know, that two things may be combined together, either because they depend on one and the same cause, or because they always happen together.

Two things may exist together at the same time, and be very intimately united, and yet the one may not depend on the other. Philosophers agree, that the flux and reflux of the sea, depend chiefly on the position, in which the moon finds itself with respect to our globe. And yet this motion of the waters does not render this impression of the moon perceptible. There is no flux or reflux to be perceived in the Baltic sea, nor from Hudson's bay to the bay of Campeachy,

Campeachy, nor in the Caspian sea, and other places. The barometer undergoes no variation from this attractive power of the moon. The moon does not seem to have any influence on the winds. The periodical winds seem to depend on the sun. Nor has the moon that influence on vegetable life, which has been ascribed to it, by gardeners and country people. The observations, made by La Quintinie, Reaumeu, and Buffon, during a great number of years, prove, that it is impossible to perceive the least influence of the moon on vegetables, and that phenomena are every day occurring, in the vegetable kingdom, in which the moon has no share. The moon acts on the earth only by its light. Its luminous rays have been collected in the focus of the largest burning glass, without any heat being communicated to the thermometer.

Although it seems proved, that the moon has no sensible influence over the earth, yet there are many writers, who think they can ascertain its influence over the human body. The Dissertation, written by Mead, to prove this, is, in some respects, useful, although it is founded on a false principle. He pretends, that the moon's attractive power, being greater in the full, than in the new moon, our atmosphere is then elevated, and that the air, immediately surrounding us, becoming lighter, our bodies are less compressed by it. Hence it happens, says he, that the fluids being determined in a greater quantity towards the surface, dilute, and sometimes open, the vessels. Mead fancied he was able to explain, by this hypothesis, all the affections, which are regulated by the course of the moon;

and to this aerial phenomena he ascribed the periodical discharge in women. But there is not a day passes, on which some woman has not her catamenia; whereas, if Mead's opinion was any thing more than hypothetical, every woman ought to menstruate on the same day. On the same principles, he explains the returns of epilepsy, which often correspond with the changes of the moon. But this is so dependent on the occasional causes, in the generality of men, such as the temperature of the air, errors and irregularities in diet, exercise, venery, and the passions in general, that the moon can have but very little share in this matter.

Father Belgrade, an ingenious Jesuit, has very judiciously observed, that as the moon can act on our globe only by its light, its influence ought to be proportioned to the luminous rays it reflects on us. It has been observed, says this Jesuit, that the moon occasions epileptic fits, both at the new and full moon; consequently, it does this, at times when it transmits the most, and the least rays of light to us. The influence of the moon cannot, therefore, be in the direct ratio of the light she reflects upon us; and, of course, there can be no other affinity between the changes of the moon, and the returns of epilepsy, than what is purely accidental.

Notwithstanding the incapacity and the ignorance of the vulgar, we find them constantly judging, by their experience, without ever perceiving the causes and effects, of which they pretend to determine. This sort of experience only serves to add

to the proofs of their stupidity. The less they see, the more just do they fancy their reasonings to be, and this is very natural. They therefore imagine, they have a right to oppose their experience to that of the most skilful physician.

I know a place, where the people have a custom of cramming their children with pap, from the moment of their birth, besides giving them milk from the breast, and which, of itself, would be sufficient. Nothing is more common than convulsions amongst the children there. I had occasion one day to say, what I thought of this aliment. Instead of seeking for the causes of the frequent deaths which happened, in the regimen, and in the affections this occasioned in the *primæ viæ*, the relations ascribed these diseases to the constitution of the mother or grandmother, or some other of the family. I relieved several of these children, to the seeming displeasure of their parents, because I did not treat them according to their mode of thinking. But medicines alone, not seeming to be sufficient, I desired them to change the regimen, and to give them no more pap. Upon which they all took the alarm at once, and began to cry out against me: "*Our children did very well before you came to live here. Nothing is so good as pap; we are convinced of it by experience, and we are sure, that you know nothing of the matter.*"

I am aware that many children are fed with pap, and yet do well; but, at the same time, I am convinced, that it does infinite mischief, and that many of the infants I treated, would have escaped, if

their stomach and bowels had not been so loaded with this pap, as to bring on convulsions. The people, and they who think with them, imagine they have a right to plead their experience, when they have seen a single case, which seems to prove the contrary of what has been said. They may, indeed, have seen an effect, but they reason badly from it. A good woman argues in the following manner: "*My child cried; I offered him the breast, and he was quiet. Consequently, it will be right to suckle all children that cry. I have tried this, and therefore know it to be true.*" It would be to no purpose, to say to this good woman, that the child cried, because he felt a pain in his bowels, which was occasioned by the milk, and which, suckling will, of course, increase. The moment a physician has said this, all the women exclaim against him as an ignorant fellow, who does not know, that the breast is good for children who cry. These good people don't consider, that every day's melancholy experience proves, how much they are mistaken.

They, who aim at proving the abilities of a physician by his success, likewise imagine they do this from experience. They observe, that a patient gets well under the hands of an ignorant fellow; whilst another, who is treated by an ingenious physician, dies. They are not at the pains to inquire, whether these two patients were sick in the same degree, of the same disease, and with precisely the same circumstances. It is sufficient, that the first of these patients recovered, for his physician to be considered as a man of abilities; and the death

death of the second, stamps the ingenious practitioner as a man of no understanding. And for all this, they plead their experience, although the event of these cases did in no way prove the ignorance or the abilities of the physicians. This reflection, however, is beyond the reach of the multitude.

These erroneous decisions ought not to disconcert the physician. The only persons, who can judge properly of his merit, will be men of learning and Genius, who are superior to the prejudices of the vulgar. A physician, who proves, that he acts agreeably to the experience of all ages, that he reasons from just principles, which are confirmed by the observations of the best writers, and that he has properly applied these to the present circumstances, will do well to leave the people to judge of causes and effects, in their own way, whilst he consoles himself, with having done all that is right and judicious. There will always be calumniators, said Democritus, because there will always be persons disposed to listen to them. Demosthenes, on such occasions, constantly held his peace; because, he who is overcome in these sort of combats, is always superior to his conqueror.

There are every day idiots, who recommend medicines to the sick, on the strength of experience. There are, even many persons of distinction (a),
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(a) This kind of ill-placed charity, for it usually proceeds from benevolent motives, is, perhaps, no where more frequent
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who are thus dangerously officious. Every man is permitted to relieve his fellow creatures; but surely he ought not to venture to do it in this way, without knowing the causes of the disease. I have known several people of fortune, who put by a certain sum, every year, for the purchase of medicines, which they distributed to the poor. Some of these poor people were relieved, and others were much hurt by them. Persons, who are disposed to do acts of benevolence, and to relieve the sick, would do well to consult some ingenious practitioner on critical occasions: but they never think this necessary. It is sufficient, if a remedy has succeeded in a few cases. It may do good, and it can do no harm. This is their mode of reasoning. They do not know, or recollect, that although, from a fear of doing too much, they have given less than was necessary, yet there is as much danger in doing too little, as doing too much; because, by omitting what ought to be done in a favorable moment, we suffer the disorder to increase, and are no longer able to master it. A blind zealot is always

and fatal, than in England. I know a clergyman's wife, who is so prejudiced in favour of a mixture, the principal ingredient of which seems to be Emetic Tartar, that she distributes it on all occasions. If any poor people are indisposed, within her walks, she goes herself, with her bottle in her pocket, and recommends it with so much goodness, that it is impossible to refuse taking a cup of it. If they are at a greater distance, she sends it to them. I once had occasion to see the fatal effects of this remedy, in a patient, whose death was, at any rate, considerably hastened by it. There is hardly a village in the kingdom that would not furnish similar anecdotes.

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a dangerous man. No person of good sense and humanity, who knows the sweets of life and health, and the value of our industrious poor to the state, will surely interfere in so serious a matter, as the treatment of a disease, of which he knows not the cause, if he gives a single moment to reflection. But it is less difficult, with the generality of men, to determine the causes of a disease, by the effects of a remedy, than it is to reason like philosophers.

Notwithstanding all the difficulties, which, we think, must naturally occur to every man, who considers a disease, we, every day, see men of the most confined understandings, deciding the most hidden things with the greatest boldness. Blinded by prejudice and passion, men often fancy themselves less biassed, in proportion as they are really influenced, by them. They confound Science with Experience, and Experience with Science, without possessing either the one or the other. The merit of a physician is misunderstood; the patient is hurried into the grave; and Ignorance, whatever may be the event, is triumphant. To judge from the conduct of this incorrigible vulgar, physicians would seem, to be the only persons, who are ignorant of physic; and yet, so great is the inconsistency of the ignorant, that they are every day sending for physicians.

I will suppose, what may, indeed, be true, that a man, of a narrow understanding, has learned, from some particular observations, that some one remedy or method has been used with success. But surely, it does not follow, from this, that it will
have

Have the same success in other cases, which have only a precarious affinity with the former one; or which, if really of the same nature, differs from it in some particular circumstances. I know, that Aristotle made, what he called simply, *Experience*, to consist in the remembrance of particular cases; but, at the same time, he considered, as pure machines, they, who simply adopt this, without joining to it the use of reasoning.

The causes of diseases will never be ascertained, unless we join reasoning to facts, and facts to reasoning; because, simple facts, without reasoning, will afford us no idea of the nature of the phenomena, nor will reasoning in any other way, than from facts, be applicable to any circumstance that may present itself. Aristotle, therefore, did well to say, that even with a knowledge of general principles, we shall be liable to commit frequent errors in the healing art, unless we join, to this knowledge, the experience of particular cases; because, it is only to these, we shall be able to apply these principles. Aristotle adds, that he who possesses these principles, is the man of erudition; because, it is he, who possesses Science, properly so called.

SECTION II.

Of the manner of investigating the causes of diseases.

“THE causes,” says Fernelius, “are so intimately connected with diseases, that it is impossible for the latter to disappear, so long as the former subsist. They, who instead of acting with the temerity of empirics, aim at reasoning on what they see, begin by investigating the causes which excite or foment the disease, that they may be the more easily enabled to accomplish the cure. Philosophers have been particularly studious to inquire after the causes; because nothing can be known with certainty, unless we are informed of these. So long as a cause continues its energy, so long will its effect continue likewise. The power of the causes is to be estimated by the state of the *vis vitæ*: because the vital principle, being the faculty on which all the others depend, the less affected that is, the less powerful and considerable will be the causes.”

The investigation of these causes is not performed without considerable difficulty. In general, we seldom can discover them in their effects, at the first glance. That which is known, does, indeed, lead us to the unknown; but the former may depend

on so many different circumstances, that it is only by the most scrupulous inquiry, we can be able to ascertain a cause, by the determination of its effect. A disorder, in the functions, leads us, at once, to suspect these causes; but this irregularity may, perhaps, be ascribed to several. On such an occasion, the mind sees things with uncertainty. The way to discover the cause is, indeed, open to us, when we have well observed; but to know how to conduct ourselves in this way, we must be aware of the varieties that are to be found in all these causes. It is only by being able to discriminate these, that we shall be able to combine the causes with their effects, without being deceived.

The mind conceives the idea of an effect, from the sensible change we perceive in the body. That which has occasioned, or seems to have occasioned, this change, gives us an idea of the cause. The general acception of the word cause, is the reason, by which we comprehend the existence of a phenomenon; and by the cause of a disease, that which has excited it.

There is always a direct or indirect affinity between a cause and its effect. This connexion or affinity is direct, when an effect is immediately excited by its cause; when it depends on a first cause, but may be referred to one or more intermediate causes, it is said to be indirect.

As a cause constantly indicates an effect, and an effect a cause, the first idea of cause is that of an efficient cause. This efficient cause, is either single

gle or multiplied, essential or contingent. An essential cause is that, which must necessarily have produced an effect. A contingent cause is that, which produces an effect only with a certain supposition. A common cause is that, which operates by the concurrence of one or more others. Properly speaking, there are no contingent causes; because these can only be the effect of other causes, either known or unknown, and, of course, essential.

Although an effect may seem to be purely accidental, inasmuch, as that it does not happen often, still it is not the less necessarily determined by its particular cause, although this cause may be unknown to us. It can be considered as accidental only, with respect to that, which commonly, or the most usually, happens in such circumstances. It is in this sense, we are to understand Cicero, when he says, '*Adjuncta non semper eveniunt.*' But this effect is not excluded by him, on this account, from what he calls *consequentia*, that is, *Quæ rem necessariò consequuntur*, or, the necessary effects of an antecedent cause.

Every thing that immediately precedes a thing, which cannot take place without it, must necessarily be connected with it. This is the reason, why a cause, constantly conveys the idea of a necessary affinity with its effect. We cannot be allowed to make any distinction between an occasional and a contingent cause. The occasional cause is necessarily connected with its effect. But in the operations of nature, there are no occasional causes. Every thing, says Cicero, is uniform and constant.

The idea of a direct or indirect affinity, between a cause and its effect, leads us, at the same time, to distinguish between a proximate and a remote cause. A remote cause is that, which determines, as it were, the possibility of a thing. A proximate cause, is the cause, properly so called.

Every common cause is that, which contributes to the production of an effect. If it acts with the others, and at the same time, it is simultaneous. We are not to forget, in the consideration of these simultaneous causes, that, separately, and without the concurrence of the rest, they would not be able to produce the effect we are observing, and, therefore, we are to consider them collectively.

But physicians commonly allow to the word *cause*, a more general acceptation. They understand by it, whatever contributes to excite a disease, whether it be a real cause, or only part of a cause; or a particular state of the body, without the concurrence of which, the disease could not take place; hence, the distinctions of causes, considered as relative to diseases. The one sort are, in general, those, which have contributed to excite and render the disease possible; and these are called, Remote causes. The others, are those, which immediately occasion the disease; and are called, Proximate causes. The former, are the causes of a disease being possible; the latter, give it actual existence.

A physician acquires a knowledge of the causes, by considering, what might be the state of the patient before the attack, and what is his real situation,

tion, since the morbid causes have exerted themselves upon him. This latter state is indicated, by the disorder of the pulse, and respiration, and of all the other functions in general. The sensible changes, lead us to presume the causes in general; our own, and the observations of others, inform us, how much each of the probable causes may have contributed to produce this alteration. We then ask, whether any thing has occurred, at any time, similar to what we are presuming. If there has, we are enabled, perhaps, to trace out the cause. The moment we have distinguished one or more causes, capable of producing the disease before us, we then consider the causes themselves, with respect to their energy; and from this, we are led to judge of all they have produced, and are likely to produce. If the disease corresponds with the effects, which we see may result from the action of these causes, we may be said to know the disease. The physician ought to aim at diminishing, as much as possible, the number of effects he is required to investigate, and he will do this, by simplifying and reducing several symptoms, to what is the most common to them. The more he advances in this plan, and the more he distinguishes that which is accidental, from what is constant and essential, the more will he approach to the cause he seeks after. The number of different diseases would be considerably diminished, if writers would confine their description of effects, to those which are essential and inseparable from each disease. We soon acquire the knowledge of a disease, when we are previously aware of what we are to attend to, in any particular case,

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It is not easy, or indeed always possible, to determine the difference, between that which is essential, and that which is not; because, in some cases, we must find out the causes of the non-essential symptoms, before we know that they are such. These causes are to be found, by inquiring, whether the symptom before us, is derived from the essence of the disease; or, from a cause, which is not inseparable from the disease. We may ascertain the former, perhaps, by considering all the powers of the diseases; and the latter, by comparing together all the other circumstances.

We may likewise reduce and simplify the causes to a certain degree; because different diseases may be the same in their nature, although they have different seats. Thus, an inflammation of the head, or lungs, or intestines, is, in reality, the same thing, although its effects are very different.

The effects of a simple cause are sometimes different, and, of course, the effects of different and complicated causes, will be so likewise. There are many diseases, which owe their source to one cause, and which are cured the moment that is removed. Van Rozen has proved, that the *Purpura Scorbutica* (b), described by Eugalen, but in a better manner by Hoffman, may be concealed, and assume the appearance of any other disease. He has proved, that cough, cardialgia, melancholy, gout, palsy, and even tetanos, may be derived from this hidden

(b) See Dr. Cullen's *Synopsis Nosolog. Meth.* pag. 203.

cause,

cause, which is easily removed by a gentle diaphoresis. In such a case, the cause is discovered only in the cure. Sometimes, the effects of different causes are similar to each other. Women, who are subject to chlorosis, experience the same symptoms as those, who are bit by the Tarantula (c), and are cured in the same manner.

The causes of diseases are, in general, complex; that is, many determinate powers form so many parts of a cause, and, of course, a disease, which is the result of their combined power. Thus the remote causes concur together in forming the proximate cause. A simple effect may, likewise, be owing to several causes, so that we shall, with difficulty, fix on a general cause, when several may agree in producing the same effect. Thus, cardialgia, which is so common amongst children, and which carries off a great number of them, consists in convulsive motions, during which, the child becomes blue. This may be occasioned by the meconium, by milk, by dentition, or other causes.

Madness may likewise originate from a variety of causes. In general, it is a very simple disease, because it may be reduced to one single idea, which predominates above all the rest. In such cases, therefore, we must endeavour to discover every thing that is contrary to the order of nature. We must range amongst the causes, those phenomena,

(c) The history of the Tarantula, and its effects, are now known to be fabulous.

which,

which on other occasions, we have observed, to make a dangerous impression on the mind. In this way, we learn to distinguish, in a separate manner, each solitary cause, which has united in co-operating the same effect.

Very compound effects, and which are derived from different causes, are discomposed and analysed, when we have ascertained the connexion of these effects, with their causes, and the connexion that the causes may have on each other. We must trace to its source, each individual effect, which, of itself, cannot explain the phenomena of a compound effect; but we ought to have a previous and determinate knowledge of the power of each particular cause, we may suppose to be united in the compound cause; or, at least, we must be careful not to ascribe to causes, what is not indicated by the effects.

When a compound effect has indicated several causes, we should inquire, whether these causes have existed together, or concurred, one after the other, to produce the effect. If they co-exist, we should aim at determining what they may produce when reunited, by estimating the common effect from the particular powers of each cause. The produce of all these causes, which do not counteract, and which, of course, cannot destroy each other, is the compound effect, the causes of which are thus ascertained. It is in this way, we are to proceed in the investigation of all compound diseases; whether two only may be united, as the lues and the gout; or three, as the lues, the gout, and scorbutic

butic diathesis. But if, in this inquiry, we perceive, that two things are reciprocally repugnant to each other, and which cannot have concurred together, we may conclude, that one of these is not the cause.

The analysis of the causes will, therefore, be an operation of some length, at the bed-side of the patient, whether his disorder be simple or compound. Every thing depends here on the art of questioning judiciously, and of this art every man is not possessed. I have often heard the most ridiculous questions put by old and uninformed practitioners, and have been hurt by the applause, with which they were received. Rousseau has very properly remarked, that we ought to be well acquainted with things, before we can be able to inform ourselves of what we do not know. The Indians say, "The learned man is instructed, and inquires; but the ignorant man, knows not what he is to inquire after."

An inquisitive and ingenious physician, carefully examines all the circumstances, which can lead to a knowledge of the true cause of a disease. He examines, not only the natural state of the air, but likewise its accidental qualities; he aims at ascertaining, how, and in what, this air, the preceding seasons, the constitution of the present season, the exercise, regimen, sleep, excretions, or other external causes, can have altered the health of the patient. From these he proceeds to the sick body itself, by examining the state of its functions, and, especially, of its secretions, and inquiring,

ring, what was the state of these, previous to the attack; that he may be the better able to estimate the changes they have undergone from the disease. The temperament of the patient will likewise claim his particular attention. A knowledge of this, will very often afford a greater resource, in determining both the remote and proximate causes of a disease, than any other means. We easily judge of the state of a patient, when we are previously aware of the diseases, to which he has the greatest predisposition.

It has been remarked, however, that every disease is not the effect of all the causes, that are re-united in a particular sick body. It has been proved, from calculation, that no disease would resemble another, if each of these causes were to manifest itself in the patient, by an effect, peculiar to itself. The celebrated Sauvages has calculated, that, from seven causes only, there would result four thousand six hundred and ninety-nine effects; or, in other words, so many diseases specifically different from each other; on this principle, an hundred causes, would occasion an infinite number of diseases; and yet, the genera of diseases seem now to be determined; and the species, which have been described, amount only to about three thousand (*k*).

(*d*) Nosological writers differ exceedingly from each other in their number of Genera. Vogel describes 560; Linnæus 325; M. Sauvages 215; Dr. Macbride 179; and Dr. Cullen only 122.

The celebrated Stahl, after considering this matter, composed a Dissertation on the rarity of diseases. In this work, he proves, that the theory of the causes of diseases is defective; that we mistake variable phenomena for these causes; and that a man would not only be ill every day, but he would even have different diseases every day, if the effects attributed to these causes were well founded. It would seem, as if Stahl, when he made these objections, did not recollect, that physicians, every day, admit the word cause, in a more extensive sense, and that they understand by it, every thing which contributes to procure a disease, without considering it as the true cause of the disease: so that no body pretends to speak of causes without effects, nor effects without a cause; because this, as Cicero observes, would be disgraceful to philosophy.

We ought to endeavour to discover all the causes of an effect, and we shall be always liable to err, if, instead of analyzing all the causes, we confine ourselves wholly to one; and yet, the greater number of physicians, before Boerhaave, fell into this error. That great man proved, that many causes might unite to produce a single effect. On the subject of digestion, Galen adapted a single cause for all the others, by attributing this process wholly to heat. He said nothing of respiration, or the motion of the abdominal muscles, or of the stomach, or of the maceration of the aliment in the Gastric juices. He seemed not to have been aware, indeed, that the digestive process may be

carried on independent of heat, as is the case with fish.

Morgagni observes, that the variety of causes, even in a single disease, is much greater than men of ordinary capacity seem to suppose, and that the same disease may be simple, and yet very complex. Boerhaave has proved this, in the cases of blindness, deafness, and difficulty of respiration. Senac has proved the same thing, with respect to the palpitation of the heart. The anxieties of hypochondriacal patients, sometimes, follow a neglect of the duties of their station. I have observed, that they, who are not exact in fulfilling their duty, fall from this cause alone, into the greatest despair, after experiencing all the symptoms of hypochondriacal affection; but I observe, likewise, that they speedily recover, when they are convinced, that this neglect, will in no way prejudice them. But if any one should conclude from all this, that to avoid hypochondriacal affection, a man need only be exact in fulfilling his duty, he would derive a consequence *a minori ad majus*, which would be erroneous; because many persons become hypochondriacal, merely from a scrupulous attachment to their duty.

After having ascended, by analysis, from effects to their causes, we must return, with the same philosophical spirit, to examine them synthetically, by passing from the causes to the effects we have observed; or, we may proceed in both these ways, as we shall, indeed, be obliged to do, on many occasions. By adopting the synthetical method, as I shall

shall do, in the following chapters, on the Remote causes, we shall be able to determine the effects more immediately by the causes; and we shall propose the facts, as they proceed, the one from the other, in order the better to prove them.

When we know the nature of the effects which depend on a cause, these effects soon conduct us to that cause; and we shall the more readily discover what is, or is not, the cause of any particular change in another case; it is chiefly in this way, that we learn how to refute the popular errors, which a sensible physician can never adopt. Thus, the vulgar are of opinion, that nitre is a heating, and pepper a cooling medicine. It is in this way, likewise, that we can learn how to distinguish the effects of nature, from those of the remedies we employ; because, after having investigated the cause analytically, we next proceed synthetically, and thus are enabled to ascertain, what effects the cause is able to produce; and thus, we shall never attribute to a medicine, the effects which come immediately from nature. The most minute causes have a wonderful effect, when they act without intermixture; slight, but continued errors of diet, prove this. Their effects will, likewise, be different, according to the parts on which they act. Thus a slight prick in the nail, at the extremity of the finger, has sometimes brought on the most horrid convulsions.

The violence of the cause should likewise be inquired after, with all possible care. This will be estimated chiefly by the state of the parts affected;
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by the type of the disease; by the number, the greatness and violence of the symptoms; and by the inefficacy of the best chosen, and best applied remedies. All these circumstances of the violence of a disease, will be found to have occurred in a species of colic, which I shall describe hereafter, and which depended on the irritability and inflammation of the intestines.

Experience likewise proves to us, that both causes and effects change their determination; and that an event is sometimes the cause, and sometimes the effect, of the same change. Worms are, unless I am deceived, one of the causes; and sometimes, likewise, the effect of epilepsy, in which the voracity, usual to these patients, joined to the weakness of the natural functions, furnishes enough for their supply. Anger is often a cause of epilepsy; but a disposition to anger is, likewise, the usual effect of this disease. Excess of venery is also a cause of epilepsy; and an excessive disposition to venery, is almost always one of its effects. Grief, uneasiness, and anxiety, are, sometimes, the causes of hypochondriacal affection and hysterical passion; and, in general, they are the effects of these same diseases. A change happening to the body, has very often occasioned another on the soul, and this change on the soul, has effected another on the body.

We cannot well be deceived, as to the alternate vicissitudes of cause and effect; because, that which succeeds relative to time, to clear and sufficient causes, is always an effect. I once saw a case of epilepsy, which was kept up many years by drunkenness

enness and onanism, after having been, at first, brought on by the horrors of a monastic life. After a very considerable time, the patient voided, at first, common worms, then small flat worms. These appeared, after the epilepsy had been a long time decisively established from other causes; and they were, therefore, not the cause, but an effect of the disease. By a careful attention, in this manner, to time and circumstances, we shall likewise learn to know the reciprocal changes of causes and effects.

Notwithstanding this, we are not to consider the effect as the cause, when such a change cannot possibly take place. Melancholy patients commonly fall into this error, by considering the moral effects which follow their bodily ills, as the causes of their disorder. These persons often fancy they are melancholy, only on account of such a grievance, or misfortune; whereas, they are melancholy, because they are really sick. They ascribe to moral causes, what is owing wholly to physical ones. They imagine, they have lost their wealth, their friends, or their reputation; and yet, they recover all these the moment the remedies employed, have sufficient efficacy to expel the flatus from their intestines.

Sometimes, the remains of a disease, are mistaken for the cause of that which preceded it; or, the signs of a patient's amendment for its cause. Degner relates, that a pudding recovered a patient from dysentery. A patient, sometimes, has a long and smart attack of fever; at length, he feels a strong inclination to eat two red herrings; they are given to him, and the fever returns no more: but the
great

great desire to eat the pudding, or the herrings, in these cases, was the signs, and not the cause, of a restored digestion. It is, from a mistaken notion of the same kind, that pickled meat, and cheese, have been recommended as medicines of so much efficacy in dysentery.

Boerhaave observes, that it is a dangerous error, to ascribe all the diseases of young women to a retention of the catamēnia, which often do not appear, only because the patients are sick from other causes. He adds, that from an improper treatment, by thus confounding the effect with the cause, they very often become hectic. The suppression of the menses, is frequently an effect, and not a cause, of the febricula, described by Manningham.

It appears, from all that I have said in this chapter, that the physician, who is possessed of Genius, is alone capable of tracing, and ascertaining the causes of diseases; that the vulgar are absolutely incapable of determining these causes; and, that it is of no use to see, and to try every thing, if we are too little enlightened to see, too ignorant, to be able to conclude, from sound reasoning, and of course, unable to decide on any fact, which relates to the state of the human body.

CHAP. IV.

Of the Remote Causes of Diseases.

AFTER having pointed out a part of the errors, into which the physician is liable to fall, in investigating the causes in general; and having traced out the way, which will lead him to a knowledge of those causes, I will now endeavour to consider, and describe, the causes themselves, their variety, and the influence they exert, naturally or accidentally, over the human body.

We have already observed, that the cause of diseases, are distinguished into Remote and Proximate. By Remote causes, we understand those, which contribute more or less to excite a disease, but which produce it only when combined together. Others give the name of Remote causes, to those, which suppose one or more intermediate causes, by the presence of which, the disease manifests itself. It has been asserted, that these intermediate causes did not exist; and that, relative to the effect, we ought to consider, as Remote causes, all those which produce an effect, but which, however, is not yet the disease; because, to constitute this, requires one or more other co-operating causes. The Remote causes contribute, therefore, to the production of a

disease; but are not sufficient to give it actual existence.

There are many kinds of Remote causes. Those, which have their seat in the body itself, are called, *Antecedent*, or *Pre-disposing causes*; and those, which are joined to these, are called, *Occasional causes*. Neither of these, can of itself, produce a disease; because, the Occasional cause does no harm, if the patient has no Pre-disposition to receive its impressions, and *vice versa*.

The Antecedent or Pre-disposing causes, are internal causes; whereas, the Occasional causes are external, being foreign to the body, and exciting disease, only by acting externally on the subject. These are the clearest of all the causes; we search for them, commonly, in the six things, called *Non Naturals*, and in the passions of the mind. Pitcairne has, perhaps, done better, to confine them to the influence of other bodies on ours, and to the influence we have on ourselves.

Thus, although the Remote causes of diseases, are not the causes, properly so called, and ought not to be confounded with these, yet, have they not the less claim to the most careful investigation; because, by their means, we may hope to attain a knowledge of the Proximate causes; or, because the concurrence of the Remote causes, taken together, forms the Proximate cause of the disease. Besides, it is much easier to acquire a knowledge of the whole, from its parts, than it will be, by neglecting those parts.

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In considering the Remote causes of diseases, we ought to investigate the supposed influence of each upon the body, in its separate state; and then consider, what may be their influence collectively. Sometimes, we shall find, that one cause acts upon another; at other times, a single cause, will act upon the disease present; sometimes, they will all act together, and very often, a compound effect will be derived, as we have seen, from a simple cause. To ascertain the Remote causes, and their effects, will, therefore, require a philosophical Genius, well versed in the history of Nature; otherwise, we shall only fall from one error into another.

I will begin with the external causes. These are to be met with in every thing that surrounds us, and determine, as it were, our existence. Both health and disease flow from the same source; and the least change in these external things, instead of life and health, may bring with it poison and death.



CHAP. V.

Of the air considered as a Remote cause of diseases.

THE air, we breathe, acts with a degree of pressure, equal to thirty-two thousand pounds weight on the body of a middle-sized man. Our fluids counteract this pressure by a proportionate resistance, otherwise, we should be unable to support it.

But this same air, which surrounds us on every side, is not a pure æther, but the atmospheric air, impregnated with a variety of extraneous bodies, and which exhale from the earth. These, and other circumstances, are the causes of the variety of changes, the air may occasionally bring about in the human body.

Let us first consider the heat of the atmosphere. It would be superfluous to prove, that the hardest bodies, even iron, are expanded by heat; and, that by this, the cohesion and connexion of their parts, will consequently be weakened. Heat may, therefore, be expected to produce an analogous effect in the human solids, and excite an increased motion of the fluids, if it exceeds the natural heat. It is
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on this account, that the strength and the appetite become more languid, that we bleed at the nose, and that dropfical patients swell more, as the summer advances. Hence too, the violence of acute fevers.

The nervous system is always the most affected by heat. This is the reason, why weak and delicate subjects suffer the most from it. In Switzerland, I have often seen hysterical women affected with violent syncope, or convulsions, or obstinate diarrhoea, and not recover again till the hot weather ceased. I have seen literary persons have similar diarrhoeas during the heat of summer, and not recover till the cold weather came on. Sir John Pringle has observed, that heat alone is seldom fatal to an army, unless the troops are exercised, or march in the heat of the day, or that the soldiers lie down to sleep exposed to the sun. The heat of the sun is very often fatal with us, as well as in other countries. I have seen labourers, returning from the plough, fall down, and die. Others, who recovered from the first attack, having exposed themselves anew, died within a few hours. I have seen similar events in the electorate of Hanover. It is well known, that the heat of some particular days, may be the same in a variety of climates; even in Russia, as great heats have been, now and then, felt, as in South America. I have, in Switzerland, seen violent phrenzy brought on by the excessive heat of the weather. In France, a child eight years old, was seen to lose its memory, during the summer heats; to recover it again when
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the heat began to abate, and to lose it again at the return of summer.

The inhabitants of the *Pays de Vaud*, are obliged to send their children, during the summer months, to the mountains; otherwise, they would be in danger of losing their memory, or their senses. It is, without doubt, on account of the great heat of this country, so extolled, in other respects, by Rousseau, that it contains so many idiots. The number of these, according to the observations of Baron Haller, is incredible in this flat country, and even in the mountains, in proportion to the number we meet with in other countries. These people are born of healthy parents; their faces hardly resemble the human figure; their mouth is extremely wide, and commonly gaping; the saliva is constantly flowing down to their chin; they have almost all of them bronchocela, a harsh and disagreeable voice, and a mind, incapable of the least reflexion. Some of these people, the number of whom is so considerable, pass their days in bed, and seem averse to any exercise, or even motion; they live to a great age, but seem not to have more, or even so much, understanding as brutes. They are so stupid and insensible, that Baron Haller saw one of them die, not long ago, merely because he had so long abstained from relieving nature, that the rectum had acquired a foot of diameter by a retention of the feces.

The effects of continued heat are more general, and hurtful in the more southern climates. In Italy, Spain and Portugal, people generally repose themselves during almost the whole afternoon; because,
nobody

nobody has sufficient strength, during the heat of the day, to go about their affairs. At Delhi, they are obliged to sleep at the door of their chamber, and without covering, during more than half the year. The merchants, and people of rank, sleep in courts or gardens; the common people, in the street. The debility both of body and mind, occasioned by excessive heat, is, in India, a very serious and fatal disease to persons of every rank. At Batavia, from nine in the morning till noon, people feel a painful lassitude, the moment they go into the street. In the island of Ormus, the air is inflamed, as it were, during the day time, by the light reflected from the white mountains, so that, it is one of the hottest countries on the globe. The inhabitants are obliged to retire into the forests, and to plunge themselves into water. The perspiration is extremely great in those countries. Bernier relates, that, in his voyage from Lahor to Cochemie, his body became truly sieve-like, and that he had hardly swallowed a pint of water before it flowed out like dew at his fingers. It is well known, how much excessive sweating weakens the body. The debility must therefore be extreme in very hot countries. The stomach is likewise very weak, and people in those climates seldom have a fresh complexion, or the appearance of good health. The inhabitants of Banda, and the other oriental islands, have a sickly and swarthy look.

The heat is so great, and so unhealthy in Jamaica, that there is no where to be seen the florid complexions we meet with in temperate climates. The inhabitants of this island are pale, sickly, thin,
and

and of a cadaverous hue. They appear rather like so many apparitions than living men. The negroes in America, sweat to such excess, that they are constantly languid and sickly, and neither work nor speak, but with extreme indolence. The Europeans preserve their complexion, and their health, during three or four months after their arrival; and then they become like the rest of the inhabitants; with this difference, however, that this change is much more sensible in young people (*a*). At Curassau, Europeans gradually lose their fresh colour and vivacity: their natural heat even becomes three or four degrees less than what it was at their arrival.

These are the reasons, why convulsions are so common in hot countries, and why in the island

(*a*) This seems to be taken from de Ulloa's voyage, who relates it of Carthagena, where we are told that, "the invariable
 " continuance of great heats, without any sensible difference
 " between night and day, occasions such profuse perspiration
 " in the body, that the wan and livid complexions of the inhabitants, would make a stranger suspect, that they were just
 " recovering from some terrible distemper. Their actions are
 " conformable to their colour; in all their motions, there is
 " something relax and sluggish; it even affects their speech,
 " which is soft and slow, and their words are generally broken.
 " But notwithstanding all their appearances of sickness and debility, they enjoy a good state of health. Strangers from
 " Europe, retain their strength and ruddy complexion, possibly
 " for three or four months; but afterwards both suffer such
 " decays, from the excessive perspiration, that these new comers,
 " are no longer to be distinguished, by their countenances, from
 " the old inhabitants. Young persons are generally the most
 " affected by the climate, which spares the more aged."

of

of Bourbon in Africa, and of Barbadoes in America, the whole body becomes convulsed after the least wound. The oriental writers, the missionaries, and others, prove, that Melancholy is a disease which reigns principally in the East, but above all, in the parched climate of Egypt. Hippocrates observes, that even in his time, it was pretty prevalent amongst the Greeks.

Acute diseases, are very rapid in their progress in hot countries. Intermitting fevers, are either very rare, or altogether unknown in the East Indies. Continued fevers, on the other hand, are so violent, that the patients become at once delirious, and die in a few days, and sometimes even in a few hours, according to Bontius. Tittingh says, that at Curassau, the thermometer is usually from 80° . to 84° , and that Europeans on their arrival are commonly attacked with ardent fever.

Exclusive of this natural heat of the atmosphere, the air may likewise be extraordinarily heated by particular causes at certain seasons, and in certain places. We do, indeed, know many countries, in which the air becomes loaded with an inflammable exhalation, which takes fire on the least approach of flame, and renders the greater part of these places uninhabitable. The winds are of use to modify this natural or accidental heat of the atmosphere in particular countries; but their effect, sometimes, is to produce a sudden transition from heat to cold, and in this case they become noxious. We shall speak more of this at the close of this chapter.

Hippocrates noticed the effects which cold produces on bodies, and particularly on the human body to which he referred all his observations. We will leave it to natural philosophers to investigate the physical causes of cold; it will be sufficient for us to notice some of its effects. We know, that it contracts even the hardest bodies, and renders them more compact; on fluid bodies it acts by diminishing their motion, and gradually rendering them solid. The human body, like all other bodies, is liable to the same laws. It has been observed, that cloaths, which are just fit in the summer months, become looser in winter, because the body is become more shrunk. Our solids are firmest in winter. We are then more active, says Hippocrates, our appetite increases, and the digestion goes on more rapidly. But on the other hand, the resistance which the fluids oppose to the solids is so great, that the strength of the latter, though much increased, cannot overcome it, if the cold is in a certain degree.

The French troops were in better health, and much more strong and hardy in Canada, than they are commonly in France. They were more like Swedes than Frenchmen. Courage and strength, seem to be peculiar to the Northern nations, so far, at least, as they depend on strength of constitution. Winter is, in general, a healthy season, when we are well cloathed, and have good fires. Even putrid diseases diminish their influence during that season; but it likewise occasions other considerable diseases. Hippocrates noticed them formerly,
and

and we continue to see them in these times, such as he described them. They who use no exercise during the winter, feel many ill effects from cold. Delicate subjects are liable to very painful spasmodic affections, after having been exposed to violent cold. This may be remedied by warmth, and by suitable remedies. A delicate woman, sixty-three years of age, in consequence of a violent coldness of one of her arms, was affected with an almost universal cramp. It seemed to her, as if all her flesh was tearing off, so great was her pain. She felt, at the same time, a most exquisite pain in her stomach and bowels. Her pulse, during the whole of this scene, was the slowest I have ever felt. In three days she recovered. When people use exercise, cold is commonly less noxious. The sailors, who passed the winter in the straits of Weiyatz, and who used exercise, preserved themselves amidst the rigorous cold they underwent; excepting the crew of one ship, who perished because they were indolent and inactive. People may live even at Spitzbergen, provided they use a great deal of exercise. But men cannot support themselves long in skating, unless they take a great deal of nourishment: because in this violent exercise, the perspiration is so much increased, as to be accompanied with considerable hunger, and an extraordinary lassitude. It will easily be conceived how much the body ought to lose, when moved on at the rate of fourteen miles an hour, which is not unusual with skaters. It is well known, how dangerous it is for a traveller to repose himself, when he feels intense cold, and an in-

clination to sleep. If he sleeps, he will probably never wake again (a).

The humidity of the air weakens a man suddenly. It relaxes the solids, and, of course, weakens the circulation, so that the secretions are carried on with difficulty. The insensible perspiration becomes checked; the moisture passes in through the absorbing pores of the skin, and the patient feels a lassitude and heaviness, which deprive him of all his gaiety, and render the mind as oppressed as the body.

The air, in certain countries, is more humid than it seems to be. This humidity is so great in the Island of Java, and the neighbouring islands, and likewise in different parts of the continent of India, that iron, steel, and even silver, are rusted, and injured by it, much more speedily than in the moistest season in Europe. Cloaths become rotten, if kept long in chests in those countries, without being

(a) The reader will probably recollect a proof of this, in what happened to Dr. Solander on the Terra del Fuego. This ingenious gentleman having been accustomed to a cold climate, was aware of this effect, and cautioned his companions against it; and yet, he himself, was the first who was attacked with sleepiness, and his friend, Mr. Banks, was very much troubled to make him sensible of his danger. Cold, when applied in a slight degree, stimulates the body; but excessive cold acts as a sedative, and destroys life.

often

often exposed to the sun. Iron rusts on the Malabar coast ten times sooner than it does in Europe (b).

The air is so humid in the West Indies, that in the island of Bermudas it rusts even the tiling of houses, and stones, almost every sort of metal, and even the largest cannon with incredible quickness. Neither hogs, nor beasts of burthen ever drink in Jamaica, and yet, they are continually sweating. The air is so moist, that the absorbing pores of these animals imbibe a sufficiency of water.

Damp situations are in every country unhealthy. Dr. Short has proved, from the number of deaths,

(b) The effects here related, ought not to be referred to moisture alone. Mr. George Forster relates, that between the tropics, in August, books became covered with mould, and iron and steel began to rust; and he ascribes this not to simple moisture, but to the great heat, which had probably raised some saline particles. He observes, that the numerous animal parts, which putrify in the ocean, supply the volatile alkali, and that the great heat seems to volatilise the marine acid contained in the brine and common salt, and that this attacks the surface of iron and steel.—The learned Sir John Pringle, had long before this observed, that the rusting of metals, is, perhaps, only an ambiguous sign of moisture in any place near the sea, between the tropics. He had been informed by a gentleman, who made the experiment in Jamaica, that though iron rusts very soon in that island, yet, that salt of tartar seemed to attract moisture from the air, more slowly there than in Britain. The celebrated writer was, therefore, led to conclude, that the speedy rusting of metals, in hot climates, near the ocean, is owing to the great exhalation of the spirit of salt, which flies off from the sea water, by means of the heat.—See *Obs. on Dis. of an army*.

that

that the marshy countries, which are not exposed to the winds, absorb all their inhabitants. Thus, according to him, more people die in the fens of Cambridge, Ely, and Lincoln, than are born there (c).

Intermitting

(c) The unhealthiness of marshy situations is not solely the effect of moisture. Large inundations seldom sensibly affect the health of the inhabitants, till the waters are drained off, and some of the effluvia of the soil itself are raised into the atmosphere.—Every day's observations prove this. The celebrated Dr. Heberden, in one of his ingenious queries, published in the transactions of the college, has ventured to inquire whether the supposed danger attending wet rooms, and damp cloaths, or beds, is founded upon experience, or prejudice which has been suffered to grow up, and get strength merely for want of being examined. The learned writer observes, that the vapours arising from the bilge water of ships, have indeed a tendency to produce the scurvy. That the swampy plains also near the mouths of great rivers, which are often overflowed, and low ground, which cannot readily be drained, and those tracts of lands, where the thickness and the extent of the woods keep the ground moist, and half putrid, for want of ventilation, are destructive to the neighbouring inhabitants, by occasioning obdurate intermittents in the colder climates, and pestilential fevers in the hotter regions. But he concludes, that all this mischief arises, not merely from moisture, but from unventilated and putrid moisture. Mere wetness, untainted with putridity, he believes to be inoffensive, and he supports his opinion by a variety of ingenious facts. Dr. Franklin, in a letter to Dr. Percival, published, by the latter in the third volume of his *Philos. & Med. Essays*, seems to adopt the opinion of Dr. Heberden. "The gentry of England, says he, are remarkably afraid of moisture and of air. But seamen, who live in perpetually moist air, are always healthy, if they have good provisions. The inhabitants of Bermudas, St. Helen, and other islands situated far from continents, surrounded with rocks, against which the waves continually dashing fill the air with spray and vapour, and where

Intermitting fevers are very frequent in all marshy situations. We likewise frequently see dysenteries, and putrid fevers, if a hot summer is succeeded by a rainy autumn. I have seen the most violent diarrhoeas, with us, in the month of September, follow a suppressed perspiration, whilst the dysentery was epidemic in the neighbouring countries. I was led to think, that both might, in some measure, depend on the same causes.

“ where no wind can arise, that does not pass over much sea,
 “ and of course bring much moisture, are remarkably healthy.
 “ And, I have long thought, mere moist air has no ill effect on
 “ the constitution; though air impregnated with vapours from
 “ putrid marshes is found pernicious, not from its moisture, but
 “ putridity. It seems strange, that a man, whose body is com-
 “ posed in great part of moist fluids, whose blood and juices are so
 “ watery, who can swallow quantities of water, and small beer
 “ daily without inconvenience, should fancy, that a little more
 “ or less moisture in the air, should be of such importance. But
 “ we abound in absurdity, and inconsistency.” Sir John Pringle
 “ observes, that, “ Commodore Mitchell’s Squadron, which
 “ lay at anchor in the channel, between South Beveland, and
 “ the island of Walcheren, in both which places the distemper
 “ raged, was neither afflicted with the fever nor the flux, but
 “ enjoyed perfect health; a proof, that the moist and putrid air
 “ of the marshes was dissipated or corrected, before it could
 “ reach them; and that, a situation open to the wind, is one
 “ of the best preservatives against the diseases of a neighbouring
 “ low and marshy country.” The late Dr. Ratty, in his chro-
 “ nological history of the weather, observes, that the *moist seasons*
 “ in Great Britain and Ireland, are more free from epidemical
 “ diseases than the dry ones; and that storms, the usual conco-
 “ mitants of rain, are more healthy than calm weather; proba-
 “ bly, because they dissipate the vapours, which by stagnation
 “ might occasion diseases.

Dr.

Dr. Grainger, a celebrated English poet, who attended the army with great reputation, as a physician, till the peace of Aix la Chapelle, observed, that in a very dangerous fever, which reigned amongst the troops in August, 1748, the number of sick, was in proportion to the variations of the thermometer. Sir John Pringle relates, that after the battle of Dettingen, the dysentery began to appear in the English army, before any fruit was in season; and he ascribes it to the troops lying wet after the battle. As soon as the army passed the Rhine, the dysentery diminished; but, few of the patients who were in the hospital escaped, because they there caught the infectious hospital fever.

After the battle of Fontenoy, the troops were in good health, because they were encamped on dry ground, and the night succeeding the battle was dry and warm. Even the autumn was healthy. At Mons, on the contrary, where the troops were in damp barracks, there were many dysenteries, remitting, and even infectious fevers. There were many sick at Louvain and Bruges, of those who were in cold, damp barracks, whilst they who were lodged in private houses were healthy. There were indeed many sick when the troops were at Breda, although there are no marshes in that neighbourhood, but then the soil is exceedingly damp. The soil in that part of Brabant is a barren sand, and would at first sight seem to be dry and healthful, but the appearance is deceitful; for water is every where to be found, at the depth of two or three feet, and in proportion to its distance from the surface, the inhabitants are free from diseases.

Barrere

Barrere observes, that before the earth was cultivated, and the wood removed in Guinea, the climate was extremely wet and unhealthy, and that the young negroe children, commonly died with locked jaw soon after their birth. Adults were likewise attacked with the same complaints. The patients felt at the same time extreme hunger; and died convulsed.

If the air is at the same time cold and moist, the perspiration is the more checked by it. The effects of such an air soon influence the temperament. We become heavier and more inactive, in proportion as these two qualities predominate in the same climate. The air at Copenhagen is cold and foggy. This is the reason why travellers complain so much of the inclemency of the sky there. It is very easy to distinguish a Dane from a Norwegian. The latter being accustomed to a cold and dry air, resembles the Swede and Icelfander, and is much more lively than the Dane. Disorders of the throat and breast are, in general, the most violent and difficult of cure, when occasioned by a cold moist air. The dysentery usually becomes epidemic in Switzerland, if cold weather succeeds suddenly to great heat, and thus checks the perspiration.

The effects of the cold damp night air, in hot countries very properly claim a place here. The inhabitants of these climates are exceedingly affected by a degree of cold, which would appear slight, perhaps, to an European. Patients of every class, and especially hypochondriacal ones, suffer much during the months of November and December, when this state

of the air commonly prevails. The opisthotonos, that formidable cramp, which bends the body of the patient backwards, and which terminates by the most horrible convulsions, happens during the night time, in the island of Java, according to Bontius, to people who worne out by the heat of the day, throw their covering from the bed. Dr. Lionel Chalmers, who has been conversant with this disorder in South Carolina, and who has described it with great exactitude, says, it occurs in all hot climates, and in every season, but more especially in summer, whenever a cold rain succeeds to great heat.

But the effects of heat and dampness in the air, are in general more fatal than those of moist, cold, air. Such a state of the air will naturally tend to relax and weaken the system, and dispose the fluids to putrid diathesis. A hot and moist air is of a fatal tendency in every country (*d*). Dr. Rogers observed that epidemical diseases constantly prevailed at Cork, after great heat and dampness. Mezerai, speaks of a terrible plague, which happened in the reign of Lewis XI. after a wet season, and long

(*d*) Sir John Pringle observes, that soldiers in a camp suffer much from heat, by being constantly exposed to the sun, either without any shade at all, or only covered by a thin tent; and where the air being so much confined, the heat is often more insupportable than without in the sun. And that this circumstance, joined to the damps of a camp, seems to be the cause, that the summer and autumnal diseases of an army, even in a northern latitude, resemble so much the epidemics of southern countries, especially of those with a moist air.

continued

continued hot winds. This plague carried off forty thousand at Paris, in the space of two months. It is right to observe, however, that physicians formerly did not limit the word *plague* to the disease we mean by it now, but applied it to every epidemic, that made considerable havoc, and even to diseases of the breast, and to ulcerated fore throat.

The seasons, in Java, are generally distinguished into wet and dry. The dry season is the winter, and the wet season the summer. The summer is very unhealthy at Batavia, on account of the heat, and moisture of the season; although the humidity and the winds are the only things which render the heat of the climate supportable to a certain degree, and even the country inhabitable. The most common diseases, such as catarrhs, are on this account very frequent and tedious at Batavia. Other more violent diseases are likewise very frequent, and extremely dangerous. The cholera morbus reigns with exceeding fury; carrying off the patient in the space of four and twenty hours at the latest. The dysentery is likewise a very frequent and formidable disease there. The dangerous effects of the hot and damp wind, which frequently prevails on the continent of Asia, are too well known. It soon proves fatal to strangers who are exposed to it, and the inhabitants themselves appear with a very sickly countenance. These people retire to the mountains, at certain seasons, when this wind is most prevalent.

The air of the coast of Juda, and of the island of St. Thomas in Africa, which is situated imme-

diately under the line, is likewise extremely unhealthy on the same account. It is well known, that the Portuguese, in order to preserve their Asiatic and African settlements, were obliged to establish stations at the distance of every thirty leagues; and at each of these the new settlers sojourned during several months, that they might thus gradually accustom themselves to this baneful climate. The seasons, in Jamaica, resemble in a great measure those of Java; being divided into dry and moist: though there is rain now and then throughout the year, and in general the air is hot and damp. Acute fevers; and colics, are the most frequent disorders in Jamaica. These fevers carry off the patient within a few hours; and the colics are exceedingly painful: if the latter do not prove fatal to the patient, they at least terminate in palsy. It has been asserted, that one seventh of the number of inhabitants die annually in Jamaica, and that without the fresh supply of new inhabitants it receives almost every day, it would soon become a desert. The air is likewise extremely unhealthy, at Carthagena, and Porto Bello. Ulloa tells us, that the most fatal diseases prevail at the latter of these places. That almost all the lying-in women die, and that neither cows nor mares breed there. The Galleons lose every year a considerable number of their equipage. The garrison is small, and obliged to be frequently relieved; and few people venture to stay there, excepting during the fair, the charms of which are alone capable of reconciling them to the deadly air of Porto Bello. Almost all the women, who can afford it, go to lie-in at Panama. The yellow fever prevails with extreme fury in Martinico, and
St.

St. Domingo, on account of the great heat and dampness of the air there. This disorder usually sets in with a profuse black vomiting, and at length degenerates to jaundice.

The dryness of the air restores to it the elasticity it had lost by its moisture. Dry air is in general very healthful, because it is very elastic. When not too cold it renders us lively and active. This is the reason, why it is so favorable to hypochondriacal patients. It seems to strengthen the mind as well as the body. Such a state of the air prevails during the winter months, at Montpellier, and with us during the fine days of September. A dry and cold air, seems to predispose the body to inflammation; pleurisy is commonly a very frequent disorder during such a temperature of the air.

A dry, and, at the same time, not too hot an air, is extremely agreeable, and very seldom unhealthful. This kind of air at Montpellier is alone sufficient to cure a number of consumptive and vaporish Englishmen. An hot dry air melts down the fat, and renders men dry, thin, and as it were parched. This air prevails in the southern parts of Spain, at Naples, in Sicily, Portugal, and particularly in Egypt. Bontius tells us, that the inhabitants of Batavia enjoy the best health when the air is dry and a little refreshed by cool winds,

Increased weight of the air produces the same effects as increased elasticity. The air is often supposed to be very heavy when it is damp and foggy, but it is certain that at such a time the mercury in the baro-

barometer falls, and on the contrary ascends, when the weather is fine. Boerhaave has proved that in the driest and clearest weather, the water is only carried higher up, and dispersed in the highest regions of our atmosphere. Therefore the more this moisture is elevated above us, the drier will be the air about us, and the greater will be its elasticity. On this principle, increased weight of the air, when it is dry and serene, and not too hot, will be found to increase our activity and cheerfulness. In cold dry seasons, the mind and the body are so much at ease, that a heavy Dutchman resembles a lively Frenchman. Scheuchzer has formed a very singular notion respecting the weight of the air; he fancies he has found in it the cause of the nostalgia, or disorder which is so frequent among the Swiss, when they are absent from their own country. I shall speak of this disease, when I come to treat of the passions. Many very powerful arguments have been opposed to the opinion of Scheuchzer.

The air is light at the top of high mountains, when the air above us is less weighty than that below, or when the air below us is loaded with vapors. Philosophers are not agreed as to the way in which it acts on high mountains, where it seems to be much lighter than in the plains. Even the ancients were of opinion, that it was difficult to breathe on very high mountains; and we find that amongst the Greeks, they who were desirous of ascending Olympus, applied sponges, wet with water and vinegar, to their nostrils and mouths, because the air of that mountain affected their breathing. The moderns have said the same thing of the Pike of Teneriffe, in Africa, and of many other mountains. The
accounts

accounts of hemoptoes and other discharges of blood from persons who have ascended high mountains are very common; and yet, Messieurs Bouguer and la Condamine assure us, that they did not find their breathing in the least affected during the six weeks they passed on Pichinca in America. Other writers, of credit, inform us, that their respiration was not at all affected, even on the Pike of Teneriffe, or mount Caucasus, or mount Etna. Dr. Arbuthnot observes, that light air is inconvenient to the lungs only when we pass suddenly into it, but that we might easily be reconciled to it by habit. Baron Haller is of opinion that the evils complained of by many people in ascending with great trouble and difficulty very high mountains, are to be ascribed wholly to the greater elasticity of the air, which is very pure on their summits. It has been remarked, that they who have travelled at their ease, or on horseback, have felt none of these inconveniences (*c*). Although the air of the highest mountains

(*c*) Dr. Darwen an ingenious physician at Litchfield, has lately published some experiments, which prove, that no elastic air exists in the fluids of the human body, or in such a state, as to become elastic by any change, yet experienced in the weight of the incumbent atmosphere; he therefore concludes that all these accounts we read of hemoptoes, &c. occurring to persons who have ascended high mountains, are to be ascribed to violent exercise, or other accidental causes. The ingenious Dr. Percival allows the sufficiency of Dr. Darwen's experiment to prove that no elastic air exists in the blood vessels, but he denies the justness of his conclusions.—He thinks, that the relations of such hæmorrhages are too well authenticated to admit

mountains does not affect the respiration of healthy people, yet it becomes extremely dangerous to hectic subjects. These patients require a very heavy air to distend their breast. This is the reason why persons so affected, who have been used to elevated situations, feel themselves so much relieved at Lisbon and Naples; and why the Swifs, who become asthmatic, breathe with more ease in Holland than at home (f).

The lightness of the air is much more sensible, when the quantity of watery vapors diminishes its

admit of any doubt or controversy, and that they may be explained on rational, and philosophical principles. He observes, and with great propriety, that the pressure of the external air must be allowed to be a cause of resistance to the propulsion of the blood through the vascular system: that if this pressure be diminished, and the action of the heart remain the same, it is obvious, that the fluids will be propelled with greater force, and that the small vessels will be more distended by them: that we see a proof of this in the effect of a cupping glass: that upon the tops of high mountains the rarity of the air diminishes this resistance universally, but, that those vessels of the body will be most distended by the vis a tergo, which belonging to the tenderest organs are the least capable of resistance; and hence, those of the lungs, nostrils, eyes, &c. are most liable to be ruptured.—See *Philos. Transact.* Vol. 64. and *Percival's Essays*, Vol. III.

(f) Sir John Floyer, in his treatise on the asthma, gives “ inquiries sent to an ingenious lady, troubled with an hysterical asthma, and her answers to them;” in one of these answers, the patient writes, “ I have found *London* air, and that of *Holland* agree best with me; and by going into a sharp air, I have immediately fallen into shortness of breath, particularly, “ upon my going from *London* to *Epsom*, but, upon my return to *London* next day, I was very well.”

pressure,

pressure; a very mountainous country is, therefore, unhealthy on this account. It rains in the Andes, as in the Alps, almost the whole year. Halley was obliged to be frequently wiping the glasses of his instruments during the night, when he was considering the heavens in the island of St. Helena, which is covered with mountains. It is well known, that a diminution of the weight of the air weakens the solids of our bodies, and checks both the secretions and excretions.

Sudden or considerable changes in the state of the air, produce very mischievous effects on our bodies. Boerhaave tells us, that the greatest height of the barometer observed until his time was $30\frac{1}{2}$, and the lowest $27\frac{1}{2}$. In Switzerland, the mercury falls much lower than this. The difference, between the two stationary points noted by Boerhaave, is almost equal to the tenth part of the greatest weight of the air, and is therefore, not less than 3200 pounds. Heat, and cold, the vapors exhaled into the air, and the variety and strength of the winds, are the principal causes of the changes in the air.

In Sweden the air is pure and serene. The four seasons are more uniformly distinguished than in any other country. In the states of Algiers, the seasons succeed each other, in the most imperceptible manner. The barometer varies at the most an inch and three tenths in the course of a year. The climate is so regular at Barbadoes, that the inhabitants experience no variation in the insensible perspiration, as is the case in cold or wet countries. There is a uniformity of fine weather in Peru, and

what is extremely singular, it never rains in that country. The sky is indeed generally cloudy, but only just enough so to moderate the heat of the sun, so that Peru is by no means so hot as the other tropical countries. This is the reason why, at Quito, the barometer does not vary more than an inch and a half in the course of the year. Addison did well to say, that nothing is more variable than the climate of England, except the temper of its inhabitants. There are, however, some exceptions to this in certain respects, and at certain times.

Considerable changes in the air are always extremely hurtful to every body, whether in good or ill health. The spring, which is so extolled by the poets, is a very unhealthy season, on account of the frequent variations in the air during that period. It is commonly in this season of the year, that physicians are the most employed, and with the worst success.

The cold nights, which in Lower Hungary succeed very hot days, are one of the principal causes of the dangerous fevers of those countries. The patients for the most part die. All delicate people, all those who are subject to nervous affections, and gouty people, or those who have been wounded, but above all, asthmatic patients, feel the least variation in the state of the air, and may truly be considered as so many living barometers. Inflammatory diseases are never more fatal, than when great heat of the air is suddenly succeeded by cold.

Hitherto

Hitherto I have only spoken of the more sensible qualities of the air, and of the effects they produce on the human body. There are other accidental qualities which are not less dangerous, and even fatal in their effects. I allude chiefly to the corruption of stagnated air, and to the noxious vapors which may occasionally mix with our air.

Air which has been long in stagnation, becomes a deadly element instead of supporting animal life. Even the air of a damp room, when it has been long shut becomes noxious, and even dangerous. I once experienced this in the neighbourhood of Berne. A parlour had been shut up all the winter, and on opening it, I was instantly sensible of the ill effects of the air it contained. Air that has been exposed to animal respiration, loses its elasticity, and becomes incompatible with life: humidity and stagnation produce the same effects.

The fatal effects of confined air, in a small and crowded room, are no where more fully exemplified than in the melancholy narrative of what happened to the English at Calcutta, and which I will briefly relate in this place.

It was in the month of June, 1756, that the viceroy of Bengal, laid siege to Fort William, the English factory at Calcutta. Mr. Holwell, assisted by the factors and the garrison, defended this post with extreme bravery, but was at length obliged to surrender. There were at this time remaining in the Fort, an hundred and forty-five men and one woman.

The whole of this unfortunate company, many of whom were wounded, and several very dangerously, were shut up the same night in a small prison only eighteen feet square. This prison, which is now better known in England, by the name of the black hole, was inclosed by strong walls, and had only two small windows at one end, secured by iron grates. In this confined situation, which allowed only a space of about eighteen square inches to each individual, the heat and the want of fresh air soon excited the most horrible effects. The prisoners, in a state of despair, began by attempting to force open the door, but in this they were unsuccessful. Mr. Holwell, who was placed near one of the windows, was more at his ease than the rest, and was consequently more cool and tranquil: he recommended it to his companions to be quiet and orderly, and not to exhaust their strength by useless efforts. This advice produced some little calm, interrupted however, by the groans of the wounded and the dying. The heat increased every moment. Holwell recommended it to them to strip off their cloaths, as a means of acquiring more space. This was accordingly done, but with no great relief. They attempted to improve this by fanning the air with their hats, but even this was too painful a task for men who were worn out, by the fatigue of the siege, and the heat of this dungeon. Another of the company, was for their kneeling down, that they might have more air. They all readily agreed to do this, and to rise together in order to avoid confusion. This was done several times; but every time the signal was given to rise, the number of those who had strength enough to obey it, diminished.

ed. There were constantly some remaining on the floor, who were unable to get up, and these were trodden to death by the survivors. All this happened during the first hour of their imprisonment.

At nine o'clock in the evening, they all began to complain of excessive thirst, and to renew their efforts to open the prison door, and to tempt the sentinels to fire upon them. Some of those who were farthest from the window, became at once furiously delirious. The cry for water was unanimous. The guards brought water, and Holwell, and two of his wounded friends received it at the window in their hats, and were going to pass it on to the rest; but so eager and tumultuous were the efforts of the croud to get at this water, that Holwell's two friends were suffocated, the water was spilt, and Holwell saw himself surrounded with dead bodies, who had been either crushed to death, or died for want of fresh air.

Hitherto Holwell, the commander, and benefactor of these unfortunate people, had been treated with some degree of respect. But now all distinction began to be forgotten. The whole company eagerly threw themselves towards the windows, and seizing the iron bars, some of them got even upon his shoulders. He was so borne down by this enormous weight, as to be deprived of all power of motion. He implored the pity of those who were upon his head and his shoulders, and requested them to let him go and die at the bottom of the prison. This request was readily complied with, every one was desirous of succeeding to his place, and without much

much difficulty he reached the farther end of the dungeon. The third part of these unhappy people were already dead, and they who were still alive pressed so eagerly towards the windows, that Holwell found himself somewhat freer in his new station. But the air was so corrupted, that his breathing soon became extremely difficult and painful. Unable therefore, to support this, he attempted once more to make his way to the windows ; and leaning on a heap of dead bodies, he now resolved to wait patiently for death. In this situation he remained about ten minutes, and then he experienced such a pain of the breast, and so violent a palpitation of the heart, that he was obliged to make one more attempt towards getting a less fatal air. There were five rows of his companions between himself and the window ; his despair carried him through four of these. The palpitation of his heart now began to abate, but he felt inexpressible thirst, and cried out for water. This water seemed to increase instead of alleviating his thirst. He therefore resolved to drink no more, and chose rather to suck the moisture from his shirt, which seemed to afford him some relief. A young man, quite naked, who stood beside him, eagerly seized the sleeve of his shirt, and for some moments deprived him of this salutary refreshment. It was not yet midnight. The little number of those who were left, were transported to the greatest excess of rage and despair. They all called aloud for air, because the water that had been brought to them afforded them no relief. Soon after this, the noise suddenly ceased. The greater part of those who were living, laid themselves down, deprived of all their strength, and peaceably breathed
their

their last. Others aimed at getting into Holwell's situation: a Dutchman mounted on one of his shoulders, and a black soldier on the other. Holwell remained in this situation till two in the morning, when he gave up his place to a marine officer, who was soon forced out of it by the Dutchman. The officer retired with Holwell to the other corner of the prison, and a few moments afterwards died. Holwell himself was soon deprived of sense, and from that time till sun rise, we have no account of what passed.

One of those who remained alive, at five in the morning, drew forth Holwell from the heap of dead, and found in him, some signs of life; about that time the Viceroy inquired whether Holwell was still alive. He was told, that if the door was immediately opened, it would, perhaps, be possible to recover him, and orders were accordingly given for this purpose. But the door of the prison opened inwards, and they who were within it, and living, were deprived of all their strength, so that more than twenty minutes elapsed, before the dead bodies were removed, which prevented the door from being opened.

At a quarter after six o'clock, there came out of this melancholy dungeon three and twenty persons, the remains of the hundred and forty-six who had entered into it the evening before. Holwell had a violent degree of fever, and was unable to support himself, and yet, in this state was he carried before the Viceroy, and by his orders transported in irons to Maxadavad the capital of Bengal. His fever
was

was succeeded by a great number of boils on the surface of his body, which came to a speedy supuration, and he recovered. The viceroy soon restored him and his friends to their liberty, and they easily went by water to the Dutch factory at Corcemabad, and from thence got a passage to England.

Confined and corrupted air produces the same effects in every country. Stowe relates that in 1577, at the assizes at Oxford, "there arose amidst the
" people such a damp, that almost all were smothered. Very few escaped that were not taken.
" There died in Oxon, three hundred persons; and
" sickened there, but died in other places, two hundred and odd." A similar event happened more recently at Taunton: and so lately as the year 1750, at London (*a*). All these unhappy effects were occasioned by one and the same cause, the poisonous quality of corrupted air. The same effects take place in hospitals, and ships, and wherever men are crowded together in small and unventilated apartments. The jail fever, which is so frequent in the English prisons, owes its source to the same causes. The prisoners in that country are seldom fed with bad meat or other unwholesome food; they have good water, and in sufficient quantity; they are well clothed, and secured from the inclemency of

(*a*) See Sir John Pringle on the diseases of the army, 8vo. edition, page 329, & seq.

the weather (b). But the healthy prisoners are in the same apartments with the sick ; and it is to the un-

(b) It is indeed true, that the uncleanness of our prisons, and their not been properly ventilated, are the great source of the jail fever ; but Dr. Z. seems to say more than we merit, when he adds, that our prisoners are well cloathed, and well fed, and secured from the inclemency of the weather. The observations of that humane and worthy writer, Mr. Howard, prove how many improvements we have yet to make in these matters. The jail fever seldom occurs in the prisons of other countries, where the prisoners are kept clean and separate. But of how much use an antiseptic diet is in the prevention of this disease appears from an observation communicated to Sir John Pringle, by the late Dr. Mounsey, who resided long in Russia, where he had been archiater under two successive sovereigns. It seems that *quas* is the common drink both of the fleets and armies in Russia. This liquor is small, brisk and acidulous, and is prepared by kneading ground malt, and rye meal into small loaves ; and these when baked, are occasionally infused in warm water, which so soon ferments, that in twenty-four hours their beverage is completed. Dr. Mounsey happening to be at Moscow when he perused the *Observations on the Jail Fever*, was induced to visit the prisons, but to his surprise, after visiting them all, and finding them full of malefactors, yet he could discover no fever amongst them, nor learn that any peculiar distemper had ever been known there. He observed, that some of the places of confinement had a yard, into which the prisoners were allowed to come for the air ; but that there were others without this advantage, yet not sickly ; so that he could assign no other reason for the healthful condition of these men than the kind of diet they used, which was the same with that of the common people of the country, who not being able to purchase flesh meat, live mostly on rye bread (the most acidulous of any) and drink *quas*.—See Sir John Pringle's *Discourse on the means of preserving the health of mariners*.

cleanliness of prisons, and to their being ill aired, and filled with animal steams from foul or diseased bodies, that Sir John Pringle very properly ascribes this fever. The hospital fever differs in no respect from the jail fever. The celebrated writer we last quoted has seen an instance of its beginning in a ward, when there was no other cause, but one of the men having a mortified limb. Barrere observed, in a military hospital, that all the abscesses had a tendency to gangrene the moment they were opened. The corruption of the air was the cause of this. The same thing did not happen when they were removed to other situations where the air was pure. It is on this account, that compound fractures and other wounds, are commonly so fatal in the Hotel Dieu, at Paris: notwithstanding the number of people who attend, and assist the patients, almost all those who are trepanned there die. It is true, indeed, that fires are kept up in the wards, with a view to purify the air, but instead of doing this, it would seem to hasten its corruption. It is well known that the plague is the most fatal, when the heat is the greatest (c).

Mercurialis

(c) Fires in close rooms will be exceedingly hurtful, both by increasing the heat, and by consuming the air fit for respiration. In more than one spacious hospital on the continent, I have seen Braziers placed in the wards, with a view to correct the foulness of the air, but the effects of these, for very obvious reasons, were bad. Moderate chimney fires in very large apartments, to which the air has free access through the doors or windows, may be occasionally useful, because by the rarefaction they produce, there will be a constant succession of fresh air.

Mercurialis relates, that the workmen, whose business required them to be near fires were first attacked with the plague which appeared at Venice. Hodges says, that the great fires lighted in London, during the time of the plague, and which were kept burning during three days, were extremely fatal to the inhabitants, four thousand of whom died in one night, whereas on other days, the number of deaths seldom exceeded four hundred. Mead observes, that nearly the same thing was experienced at Marseilles.

The inconvenience I remarked, with respect to the Hotel Dieu, at Paris, arises chiefly from the air not being sufficiently renewed there. This might easily be done by means of Dr. Hales's contrivance. Sir John Pringle assures us, that it is impossible to succeed in any cure in hospital practice, unless the wards are well ventilated. This great physician had occasion to observe, that even the confined air of a tent, was some times sufficient to occasion a putrid fever. He has likewise noted the bad effects of air arising from the privies of a camp, and rotten straw, and, therefore, in order to preserve a purity of air in the dysenteric season, he

air. Sir John Pringle speaking of army hospitals, says, "It is very common to look out for close and warm houses, and therefore to prefer a peasant's house to his barn; but experience has convinced us that air, more than warmth, is required," and in another place, he observes, that care should be taken to provide "large and airy wards, remembering that warmth is not wanting in summer, and that in winter it is chiefly to be procured by fires."

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advise

advises some slight penalty to be inflicted upon every man, who shall ease himself any where about the camp, but in the privies. He likewise thinks it may be proper to order the pits to be made either in the front or the rear, as the reigning wind of the season may best carry off their effluvia from the camp.

The fatal effects of confined air are likewise every day experienced on ship board, by seamen in long voyages. It is disgraceful to the English that the useful inventions of their ingenious countryman Dr. Hales, should be so much neglected in their fleets (d). It seems strange too, that in their ships they have

(d) The learned Sir John Pringle, speaking of the method taken by captain Cook, for preserving the health of his ship's crew, during his late voyage round the world, expresses himself in the following manner :

“ Among the several means of sweetening or renewing
 “ the air, we should expect to hear of Dr. Hales's ventilator. I
 “ must confess it was my expectation; and therefore, persuaded
 “ as I was of the excellence of the invention, it was not
 “ without much regret that I saw so good an opportunity lost
 “ of giving the same favourable impression of it to the public.
 “ If a degree of success, exceeding our most sanguine hopes, is
 “ not a sufficient plea for justifying the omission of a measure,
 “ deemed to be one of the most essential, for attaining the desired
 “ end, I would plead in favour of our worthy brother, that
 “ by a humiliating fatality, so often accompanying the most
 “ useful discoveries, the credit of this ventilator is yet far from
 “ being firmly established in the navy. What wonder then
 “ if captain Cook, being so much otherwise taken up, should
 “ not have had time to examine it, and therefore avoided the
 “ incumbering of his ship with an apparatus he had possibly
 “ never

have no particular place for the sick, who are not separated from the healthy seamen, till their number becomes considerable, and then in fleets they are removed into an hospital ship. Hence it is that the English surgeons consider the sea scurvy rather as an accidental than an original disease, for it is always spread by contagion, and more particularly when the disorder has made a considerable progress.

Raynold observes, that for want of separating patients in such cases, the greater part of a ship's crew, who sleep with these in a confined place that is shut up at night, become affected in the like manner, whilst those who are removed farther off, and whose hammocks are suspended in more airy situations, are preserved from the disease in the hottest climates. The same writer remarks likewise, that the officers of ships continue free from the complaint, even when all the other persons on board are highly

" never seen used, and of which he had at best received but
 " a doubtful character? Nor was he altogether unprovided with
 " a machine for ventilation. He had the *wind sails*, and he at
 " times found them most serviceable, and particularly between
 " the tropics. They have the merit of taking up little room,
 " they require no labour in working, and the contrivance is
 " so simple, that they can fail in no hands; but their powers
 " are small, in comparison with those of the ventilator, they
 " cannot be put up in hard gales of wind, and they are of
 " no efficacy in dead calms, when a refreshment of the air is
 " most wanted? Should there be any objections to their em-
 " ploying both?—See his discourse on the means of preserving the
 health of Mariners.

diseased

diseased, and this because they sleep and live at a distance from the sick (c).

The mildest and most distinct sort of small pox, is sometimes rendered extremely contagious by confining the patient in a heated chamber, and may then be communicated even by the cloaths. It is likewise the corrupted air of close rooms, which occasions that extreme weakness of which patients complain, even at the beginning of petechial fevers: this symptom is indeed, commonly ascribed to the malignity of the disease, whereas its true cause ought to be looked for in the corrupted air of the sick chamber, in the weight of the bed cloaths, and very often in the great fire that is unnecessarily kept up.

The dysentery becomes so contagious by the extreme putridity of the foeces, that the most healthy subjects, and even animals, become affected by it. We have an account of a dysentery which was brought

(c) The officers remain the longest unaffected on such occasions, not because they sleep and live at a greater distance from the sick, but because they live better than the rest of the crew, and have better apartments, are better cloathed, and have more fresh air, &c. Nor does it appear, that the sea scurvy is contagious, so as to be transmitted from one person to another, like the small-pox. Dr. Lind, indeed, observes, that in the year 1760, an unusual epidemic and real scurvy, prevailed over the county of Southampton, which extended itself to the ships at Spithead, and to such as were hovering on the coasts. Nor were families living at their ease in the country exempted from a slight attack, nay, some were affected with it in a high degree. This is a curious fact, but it only proves that a certain morbid state of the atmosphere may be the occasional cause of scurvy.

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from Amsterdam to Nimeguen, and from thence spread through fifty Dutch towns, and carried off a great number of people. The dysentery prevailed with such malignity about fourteen years ago, with us, that in a little district of the canton of Berne, thirteen thousand persons died. Its greatest violence seems to have been exerted in the neighbourhood of Berne. An ecclesiastic who resides within a league of that city, has related to me some of the melancholy scenes he was an eye witness to at that time, in the village of Muri. He has very often, in one little close chamber of a peasant's hut, seen several dead bodies lying on a table, ; and four or five persons, men, women and children, in their beds, attacked with dysentery ; and with their pots by their side to relieve themselves. This surely was sufficient to give the highest degree of virulence to a disease, which is of itself, contagious. The separation of the sick, together with a free circulation of fresh air, seem to be the best preservatives even against the plague.

All these fatal and melancholy effects of confined air, are not difficult to be understood. Sir John Pringle observes, that putrefaction is much more rapid in confined, than in open air. The putrid miasmata are the most volatile : they are easily removed from the body, and thus are lost in the air, and carried off by the wind ; but in a close chamber they form, as it were, a putrid atmosphere around the patient. It is well known, that the human body imbibes not only the moisture of the air, but the great number of other vapours which are exhaled into it. Keil has proved, that a young man weakened
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from want of nourishment, but in other respects healthy, added eighteen ounces to his weight, in the space of one night, and this by the absorption through his pores. Another person has been seen to gain forty pounds weight in the same manner, in the space of a day. M. de Haen, is of opinion, that dropical patients absorb more than an hundred pounds weight every day, from the moisture of the air. It is supposed, that in general, the body absorbs more than a pound every day by the pores. From all this it will be easy to conceive how much the patients, and those who attend them, have to fear from (*f*) a putrid air. In fine, the air becomes corrupted by vapours of various kinds, so as to become extremely noxious, altho' not confined. The limits of this work will not allow me to examine, all the particular effects of vapors and exhalations, much less to describe all their different combined powers. I shall therefore confine myself to some general observations, and will begin with the effluvia arising from putrid animal substances. These infect the air differently. The city of Cork is noted for the great number of cattle killed there every year, for the shipping, between the months of August and January, and which is said to amount to more than

(*f*) The great purpose of air in animal life, consists in its use in respiration, and therefore, its noxious effects are to be sought for in this way, rather than in its absorption by the pores. We now know that air, which has been once breathed, like the air in which flame has been extinguished, becomes incompatible with animal life, and the first effects of mephitic and other air that extinguishes life, are therefore to be looked for in the organs of respiration.

an hundred thousand head. There is an uncommon number of slaughter houses in the suburbs, and the offals are left to corrupt in the streets ; whenever the rain falls in any considerable quantity, this putrid matter is carried along the kennels, into the river, and thus the air becomes filled with putrid miasmata. Dr. Rogers, an ingenious physician, at Cork, observes, that in 1718, 1719, 1720, and 1721, the greater number of those who lived near the slaughter houses died. The violence of the diseases which prevail there, and which are chiefly of the putrid kind, is constantly found to increase during the slaughtering season. (a)

In Æthiopia, there are sometimes such prodigious swarms of locust, as to cause a famine after devouring the fruits of the earth, and unless they are carried off by the winds into the sea, they die and rot ; and thus in this exceedingly hot climate excite pestilence. Dr. Mead has proved, that the plague takes its rise in Africa, and he ascribes it to the putrid miasmata, with which the air of that country is constantly impregnated. Grand Cairo is considered as the spot from whence the plague is transmitted to Europe, Asia, and other countries. The canals of this great city are filled with all kinds of filth and carrion, and when the waters of the Nile

(a) Dr. Rogers joins other concurrent causes, such as moisture of the air, the want of good water, and the great quantity of flesh meat eaten by the lowest class of people, during the victualling season, without bread or fermented liquors.—See his *Essay on epidemic diseases*.

begin to be dried up, an insufferably offensive stench is exhaled into the Air. Hence it is, that the plague every year preys upon the wretched inhabitants, and is only stopt when the Nile overflows its banks again, and when the cold winds, which set in about the same time, purify the air.

All the exhalations from stagnant waters, are extremely pernicious on the same account. The myriads of insects which die and putrify in them, become so many sources of putrid miasmata. Marshy countries, without exception, abound with plants, that from their pungency and acrimony are naturally disposed to putrefaction. To this cause have been attributed the diarrhoeas and even dysenteries, which the water of the Seine excites at Paris: but it would seem as if these effects ought rather to be attributed to the quantity of filth and putrefactive matter, which flows into the river from the streets, and likewise from the hospitals and slaughter houses, which are in the very heart of the city. It is observed, however, that they who are accustomed to this water, feel no inconvenience from it, unless there are combined with it other accidental causes. Water in general is so susceptible of putrefaction, that in long voyages, when it becomes corrupted in the casks, it is found to yield an inflammable air.

The exhalations from marshes, do not seem to be so noxious in cold, as in hot countries. Nevertheless, malignant fevers occur even in Finland; and every year in Sweden, there are catarrhal fevers, and small-pox, and measles, that are extremely fatal. Cold countries are in general very marshy, on account

bunt of the snow and the ice, with which they bound in winter, and which afford great matter for exhalation, during the summer months; but on the whole, there is a much greater tendency to putrefaction in southern, than in northern countries.

The exhalations from marshy and swampy grounds produce in Germany, tertians; in Hungary, petechial fevers; in Italy, the hemitritæa; in Egypt and Æthiopia, pestilential fevers. The scum of stagnant waters is, in Barbadoes, a very active poison to birds, and even cattle.

I include, among dangerous stagnant waters, the moats of fortified places, in which the water has no motion; meadows, which are occasionally overflowed, and in short all moist ground. I myself experienced the ill effects of these exhalations when at Gottingen. The Leine, which is as inconsiderable, and almost as celebrated as the Illyssus, frequently overflows its banks at Gottingen, and renders a small part of the town marshy. The moats round the town have likewise much stagnant water in them. I lodged at Baron Haller's, whose house is very near the marshy situation I just now mentioned, and both myself, and the rest of his family, were attacked with tertians. People in the upper parts of the town were wholly exempt from these fevers, whilst with us, and in the neighbouring houses, they continued to appear till winter came on.

Tertians are very difficult of cure, and very often incurable, or fatal in Holland and Dutch Brabant.

Almost all the low countries are marshy towards the sea, and there is a great scarcity of good water. It was not without some degree of horror that I passed through these countries, after the severe tertian I had felt in Germany. Sir John Pringle, who has given us a most accurate account of these *effluvia*, observes, that both fevers and fluxes in those countries are often accompanied with worms; which are not to be considered as the cause of either, but as a sign of the bad state of the bowels, and the corruption of the aliment, owing to the heat, the moisture, and the putrid state of the air. An ingenious physician at Mulhausen, relates, that an inundation, followed by a corruption of the waters stagnating in the moats at Neuf-Brissac, was so fatal in its effects, that hardly a twentieth part of the inhabitants were exempt from the fevers which appeared at that time, sometimes as intermittents, and sometimes as remittent or continued fevers, and then again as intermittents.

Intermitting fevers are very frequent in Switzerland, in the neighbourhood of rivers and lakes, and even in the more mountainous situations. Sometimes they assume a high degree of malignity. In 1717, there prevailed at Stanz, in the canton of Underwald, a tertian fever, of so malignant a nature, that the patients were commonly carried off by the second paroxysm, with an excruciating head ach, and extreme oppression of the breast. The source of this fever was traced to an extensive marsh in the neighbourhood of the town. Intermitting fevers soon begin to assume the type of putrid fevers in

in the hotter parts of Switzerland; but in those situations, where the banks of rivers and lakes are more elevated, tertians are less frequent.

The Adige, in Tyrol, overflows its banks every year, and leaves a considerable quantity of water in the neighbouring country. Some few weeks after this, the waters become corrupted to such a degree, and so infect the air, that the greatest part of the inhabitants quit their habitations in the month of May, and retreat to the mountains, where they continue till the month of September. All those who are unable to do this, have, as we are told by Otter, a pale and sickly countenance. These people come down from the mountains only to gather in their harvest, and commonly return again with tertians.

The Teisse often overflows the low grounds in Hungary, and thus occasions those dangerous fevers, but above all the dysentery, which carry off, half the Austrian troops. Thierry observes, that the numerous colonies which pass from Suabia into Hungary, for the most part die.

The exhalations from the marshes in the neighbourhood of Rome, occasion, during the hot season, the hemitriteæ, which are so fatal there. The mouth of the Tyber is so choaked up, that it discharges its waters with difficulty, and hence there are many dangerous inundations. Targioni laments the solitary and desolate aspect of the beautiful plains around the mouth of the Cecina; it abounds with pools of stagnant water, that are occasioned by the
river's

river's not being able to empty itself. He thinks it would be possible to remedy this inconvenience by cleansing the mouth of the river, and carrying off the water from the ponds, by means of mills and sluices. It is lamentable, says he, that so fine a country should be inhabited only by a small number of peasants, going and coming, and who are paid a great price for their labour, but who according to an old proverb, enrich themselves in a year, in order to die in six months. It is indeed true, that these poor people labour continually in a damp unhealthy air; at night they retire to some of the villages that are situate on the ridge of hills, where they drink bad water, and at length die of fevers, or scurvy or dropsy. Targioni himself nearly experienced the fatal effects of the bad air in the neighbourhood of Campifasso. He began to feel a lassitude, and a difficulty of respiration; alarmed by these symptoms, he withdrew immediately to the mountains, where the air was more pure, and there he very soon recovered.

It is observed at Venice, that they who live on the borders of the canals, are very subject to obstinate jaundice, and the same thing is said to occur on the shores of the Caspian. But it is in Egypt, more than in all other countries, as we have already remarked, that these effluvia are fatal to life and health.

The reality of the effects we have described, cannot be contested, if we consider the means by which we stop their progress or prevent them from taking place.

place. Empedocles, a disciple of Pythagoras, delivered the Salentines from the dangerous exhalations, with which they were incommoded, by conducting two neighbouring rivers through their marshes. By these means the stagnant waters were carried off; the air was no longer infected; and the diseases which had flowed from this source, immediately ceased. In ancient Rome, the evils which have since deprived it of all its former splendor, were obviated by magnificent aqueducts. The places in which sea fights were represented, were supplied by subterraneous canals, through which all the water was let off the same night. It has been conjectured that the patriotism of Marcus Curtius, is handed down to us in a figurative way, and that he probably filled up at his own cost, some stagnant pools, which affected the health of his fellow citizens.

The celebrated Lancisi, physician to Pope Clement XI. by whom he was held in the highest esteem, has rendered his name immortal by the useful plans he executed in this way. He undertook to drain off the stagnant water in the ecclesiastical state, and by these means checked at once an epidemical fever, in the neighbourhood of Pesaro, Ferentino, Bagnarea, and Orvieto. The following season none of the complaints were experienced, which before this, had constantly prevailed every year. He likewise caused the mouth of the Tyber to be cleansed by mills, and opened drains through all the swampy ground, through which the stagnant water passed off. He gave directions for cleansing with hand mills, all the cellars which had been filled with
water

water during the inundations ; and the pools which from their situation would not allow of drainage, he filled up with rubbish. By these useful works he had a better claim to the epithet of, Deliverer of his Country, than those Persian tyrants who assumed it without deserving it.

All Holland is intersected by canals, and in many of them the water is stagnant, tho' many methods have been adopted of late years to prevent this, and the evil, is indeed, considerably diminished. Lancisi speaks of a pool of stagnant water in the neighbourhood of Stutgard, which every year occasioned the most obstinate intermittents ; this was dried up and the fevers disappeared. The climate of Temeswar in Hungary, is no longer so unhealthy, since a part of the marshes has been drained.

It is well known how difficult it is to remove the humidity which remains in apartments after inundations. Thierry observed at Vienna in 1750, very sensible marks of the inundation that happened in 1744, in that quarter of the city, called, Leopold's-stadt. Every thing was mouldy in the houses ; the walls were extremely damp ; and the furniture was soon spoiled and rotten. He observed too, that the people had a more pale and sickly look here than in the other parts of the city.

I had an opportunity, not long ago, of seeing some very good directions given at Zurich, after an inundation. The river Sihl overflowed its banks, and the inundation spread over one of the best parts of the town. The magistrates of this happy republic, enjoined all the inhabitants of that quarter
to

to remove the floors of their rooms, and then after taking away the damp earth, to put dry sand in its stead. These precautions had the desired effect.

Exhalations from large cities are generally of a mixed nature. I will confine myself to some of their principal effects. The air of London has the reputation of being unhealthy, and this chiefly on account of the vapor of sea coal, which is the common fuel there. It excites in strangers a considerable heat in the stomach, and sometimes a spitting of blood, and even nervous fevers, which terminate in palsy (*a*). The uncleanness which is so particularly observable in all the towns in the south of France, contributes, in a great measure, to the unhealthiness of those places. Every sort of filth is thrown at night into the streets, and it will easily be conceived how noxious the putrefaction of all these must be to the health of the inhabitants. Water which is suffered to stagnate in the ditches of fortified towns, and which is not continually exposed to the free action of the air, exhales an offensive effluvia which affects my lungs like the vapor of aquafortis, and gives me as much difficulty of respiration as if I was asthmatic. This odor is so powerful, that it attaches itself to the cloaths, fixes itself in the nostrils, destroys sound, and sometimes even takes fire or extinguishes flame.

(*a*) This opinion, which is so generally received amongst foreigners, appears to be altogether imaginary.

Subterraneous passages in which the fœces of the body are collected to be washed and carried away by streams of running water, are therefore objects of importance to the general healthiness of every place ; these matters are extremely well regulated at Berne, and yet we see a butchery and burial place in the very center of this city, which is in other respects so clean and elegant.

The want of the necessary canals to carry off the filth, is one of the principal reasons of the unhealthiness of the air at Rome and Alexandria. Rome had formerly its common sewers, but those subterraneous canals were obstructed by the fire of Rome, which served to divert Nero. Since that time they have gradually gone to decay. The water does indeed enter into them, but it is only to stagnate and putrify ; and so it does at Alexandria. This water soon becomes covered with a greenish and extremely offensive film ; and the vapor it exhales, extinguishes flame. It is to this cause we may ascribe the hemetriteæ. Burial places and interments in churches, are likewise extremely prejudicial to health. The most fatal epidemics, and even sudden deaths have arisen from these causes.

The cultivation and effluvia of plants, may, in certain circumstances be very unwholesome. The cultivation of rice is particularly so, because the land in which it is sown, is required to be kept under water during several weeks, and thence arise vapors which may affect the towns in the neighbourhood. It is on this account, that in Italy, the
growth

growth of rice is forbidden within half a league from a town. In the neighbourhood of Jortona and Novare, where much rice is cultivated, the inhabitants have, in general, a cadaverous look. On the Malabar coast, rice is almost the only object of cultivation. It is sown in the month of June, in a wet soil, which soon becomes a true swamp, from the water that is let in upon it, and when the rice is about four inches high, it is transplanted into fresh ground, which is constantly watered. The reader will easily understand that such methods as these, in a hot climate, must necessarily be fatal. It is from similar data, that we are to explain the fatality of the climate of America, to the first colonies from Spain. The soil was dry and uncultivated before their arrival, but the moment they began to till and water the ground for their sugar plantations, the most sickly effluvia were exhaled from it, and the Spaniards sickened and died.

The vapor that arises from flax or hemp that is steeped in water, is truly pestilential, and destructive even to fishes. In Germany, people seem to concern themselves but very little about the danger arising from it; whereas, in Italy, it is permitted to be done only at the distance of some leagues from a town. The effluvia from a little heap of flax, has been known to occasion a malignant fever, which proved fatal to the family in which it first began, and afterwards spread its contagion through a whole country. Lancisi observes that dangerous fevers are often prevalent at Constantinople, which owe their source to the hemp brought from Cairo,

and which is put wet into the public granaries, and suffered to ferment during the summer. It is sold, and the seeds of these diseases are thus spread amongst the people.

All the plants which have been considered as of an alkaline nature, such as cabbages, turnips, radishes, garlick, &c. produce, when they putrify, effects analogous to those of putrid animal substances. The Jews at Frankfort on the Mayne may be smelt at a great distance on account of their immoderate use of garlic ; and what a horrible stench arises in the quarter they inhabit ! Surely, it would be better policy to permit these people, who groan beneath oppression, the liberty of choosing their habitation, or of separating themselves from each other, on account of the extreme filthiness of their populace.

Dr. Rogers relates that a very malignant fever having appeared at Wadham college in Oxford, and carried off a considerable number of people, the physicians could ascribe it to no other cause, than to the putrefaction of a considerable heap of cabbages, which had been thrown from the neighbouring gardens, on a spot of ground contiguous to the college. The noxious vapors which exhaled from these, infected a neighbouring building, but had not activity enough to extend farther.

Woods moderate the heat of the towns that are near them, and may likewise serve to turn aside from them the noxious effluvia which are brought by the winds,

winds, because those vapors seldom rise high enough from the earth to pass in the current of air over the trees. Notwithstanding all this, however, countries that abound with forests, are in general unhealthy, not only because they obstruct the free ventilation of the soil, but from the occasional bad qualities even of the trees themselves. Linnæus tells us, that the shade of the filberd tree is sometimes observed to excite a flight fever. The inhabitants of Gothland, have given to the willow, for the same reason, the epithet of the wicked tree; hence too, amongst the Swedes, the name of holy trees is given to those, under which men are not permitted to sleep. All the Europeans, who first passed over to Surinam, died there, and the cause of their death was unknown, till at length this fatality was discovered to be owing to the exhalations from a venomous tree, to which Linnæus has given the name of *Hip-pomanes*. (b)

(b) Of all poisonous trees, the *Manzanillo*, which is peculiar to South America, is, perhaps, the most active. The fruit of this tree in shape and colour and flavour exactly resembles an apple; but there lurks under this beautiful appearance, so subtle a poison, that its effects are perceived even before it is tasted. The juice of the *Manzanillo* is no less poisonous than the fruit; for if any of it happens to fall on any part of the flesh, it immediately ulcerates, and unless speedy remedies are applied, the inflammation soon spreads through the body; for these reasons, after felling it, it is found necessary to leave it till thoroughly dried, in order to its being worked without danger; and then appears the beauty of this wood, which is exquisitely variegated and veined. Such is the malignity of this tree, that if a person happens to sleep under it, he is soon awaked, finds his body swelled, and continues to be in great danger and tortures, till relieved by the application of oil, and other remedies. See De Ulloa's voyage.

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Mineral effluvia, are commonly very dangerous; The copper mines at Falun in Sweden emit a vapor, which is to be smelt throughout the province, and falls in the form of a powder which appears to be a real copper. This powder has the reputation of being very prejudicial to plants, but according to the observations of Linnæus is not so to man. There often arises from tin and coal mines, a vapor which kills instantaneously.

M. de Haller includes amongst the mineral vapors, the suffocating exhalations of Pyrmont, and Schwalback: the famous exhalation from the Grotto del Canini, and from Vesuvius; all which seem to deprive the air of its elasticity, to destroy sound, and to suffocate suddenly. They who work on antimony and mercury, are subject to vertigo and hypochondriacal affection. I had occasion when at Claustal and Cellerfeld to see how much the period of life is shortened in mines. The miners generally die at the age of thirty or forty; very few of them attain their fiftieth year. Their most frequent disease is the colic, which they call *hutenkatz*. There occur in it a violent constipation, the feces that are voided appear like hard and dry globules, and Dr. Spangenberg, an Hanoverian physician, has often seen on them a film which had the appearance of litharge. These patients are subject to syncope, palpitations of the heart, vomiting, spasms, pains in the limbs, and palsy.

Iselmann, who has written on this disorder, attributes it, with Stockausen, wholly to the lead. He ob-

observes, that the bad effect of the lead begins to appear from the moment they first work the mine. A black dust arises, which attaching itself to the skin, blackens the feet and legs of the workmen so much, that they are unable to remove it. He considers the roasting of the ore as less dangerous, altho' it is by this operation that the sulphur and arsenic are evaporated, and attach themselves easily to the body. He observes, that the reduction of the metal, is much more noxious, especially when the sun and the humidity of the atmosphere prevent the air from passing freely thro' the chimnies. Hence it is, according to him, that the workmen who are employed in reducing litharge to lead, are extremely subject to the dry belly ach.

The same writer remarks that the refiners of silver are exposed to still greater dangers, because in this process, they are obliged to blow with bellows upon the surface of the metals, in order to separate the lead from the silver; and consequently, they are the more exposed to the metallic effluvia which excite the colic. The lead becomes volatile, even in the melting; Iselmann having observed, that the dust which attaches itself to the furnace, is a true lead, and may easily be reduced. One even sees a true litharge on the faces of the workmen, which is fixed there by the sweat that flows from them during the process. The miners employed at Ramelsberg, near Goslar, and who by means of explosion, open the rocks which abound with vitriol, lead, silver, copper, and sulphur, and who work naked, told me, that a mineral vapor, sometimes escaped,
which

which suddenly killed those who were exposed to it. From the mines of Quwekna in Norway, there likewise arises a most noxious vapor. This vapor forms a kind of film on the surface of the water which is in the mine. If this pellicle is torn with the end of a stick, they who are near it instantly die (c). The bodies of several miners who had been suffocated by this vapor, preserved the natural flexibility of the body when alive, but an insupportable stench issued from their mouths. Flame is extinguished the moment it is plunged into this vapor. Some-

(c) The *choke damp* and *fire damp* (the word *damp* in the German and Saxon languages, signifying *exhalation*) have long been known amongst miners. The *choke damp* is heavier than common air, and lies at the bottom of pits, or in caverns, extinguishing candles and killing animals that breathe in it. The *fire damp* is lighter than atmospheric air, taking its place near the roofs of subterraneous places, and being liable to take fire, and explode like gunpowder; but it was Mr. Boyle who first observed that elastic fluids, differing essentially from the air of the atmosphere, but agreeing with it in the properties of weight, elasticity and transparency might be generated from solid substances, and this he called *factitious* or *artificial air*. Succeeding philosophers improved on this discovery, but we are indebted to some very ingenious men of this age and country, and above all to Dr. Priestly, for a minute and satisfactory investigation of this interesting branch of knowledge. Air, similar to the *choke damp*, besides, having been discovered in various caverns, particularly in the *Grotto del Cane*; had also been observed on the surface of fermenting liquors, and had been called *gas* (which is the same with *geist* or spirit) by Van Helmont, and other German chymists; but afterwards, it obtained the name of *fixed air*, especially after it had been found to exist in a fixed state in

Sometimes there arises in mines, a very fatal vapor which takes fire of its own accord or on the approach of flame, and sometimes explodes with such

in alkaline salts, chalk, and other calcareous substances. It has likewise been called *mephitic* and *fixable*, and these names seem not only applicable to what is distinguished as *fixed air*, but to the other kinds of factitious air, which are equally noxious when breathed by animals, and are all capable of being imbibed by some substance or other, and consequently of being fixed in them. It is observed, that the presence of this *fixed air* in any substance, renders it *mild*, as in chalk, for instance, and that on being deprived of it by fire, or any other process, it becomes caustic. The Pyrmont, and other mineral waters which have what is called an acidulous taste, are found to owe their peculiar flavor, briskness, and medicinal virtues, to this ingredient. Water is capable of imbibing more than its own bulk of fixed air, and thus impregnated, will dissolve iron, and thereby become a strong chalybeate. Fixed air is $1\frac{1}{2}$ heavier than common air, and is destructive to animal life. Inflammable air, differs from the fixed air, being ten times lighter than common air; it seems to consist of an acid vapor united with *phlogiston*, and resembles the *fire damp* in taking fire and exploding on the approach of flame. It is to be procured from every inflammable substance, but neither bladders nor corks are capable of confining it. Plants grow in it without destroying its inflammability, and it kills animals as suddenly as fixed air. It has a strong and offensive smell, which is of three kinds, according as it is procured from animal, vegetable, or mineral substances. By long agitation with water it becomes compatible with animal life, and in process of time even acquires the power of extinguishing flame. Distilled water may be made to imbibe a fourteenth part of its bulk of inflammable air, but no change is thence produced in the taste of the water. Nitrous air is obtained from iron, copper, and some other metals by the nitrous acid only, and from gold and the regulus of antimony by aqua regia. When mixed with common air, it pro-

such force as to carry the bodies of the miners to a considerable distance. Browne speaks of a rock in Hungary, which altho' impenetrable to the instruments of the workmen, gives vent to a very dangerous exhalation. We read of a mountain in Phrygia, which formerly exhaled a pestilential vapor that was fatal to all those who approached to it. There is a cavern in Hungary, which emits a sulphureous vapor of so penetrating a nature, that notwithstanding the waters through which it passes, it quickly destroys animal life. Similar vapors are observed in different countries, and produce similar effects.

duces a considerable diminution of it, attended with heat; and it is remarkable, that in proportion as common air is rendered less fit for respiration by the flame of a candle, by the fumes of charcoal or by animal respiration, it is less affected by nitrous air. This latter, therefore, affords a test by which the purity of any other air may be determined. I have seen a very simple and ingenious instrument, contrived for this purpose, by the celebrated Abbé Fontana. Nitrous air does not seem to differ in specific gravity from common air, but plants die very soon, both in nitrous air, and in common air saturated with it. It is in some degree miscible with water, and imparts to it an acid and subastringent taste. It has been found to prevent putrefaction, and to restore putrid substances to sweetness. It diminishes in bulk by standing long in water, but it may be kept in a bladder better than most other kinds of air.—These properties of mephitic air, being for the most part discoveries posterior to the publication of Dr. Z's work, it was thought right to give this concise account of them in a note—for a more minute detail, and a description of other kinds of factitious air, such as acid and alkaline air, the reader is referred to the works of Dr. Priestly and others on this subject.

The several exhalations, with which the air becomes occasionally impregnated, may perhaps carry into distant countries the unknown causes of diseases. It seems however that in general, the vapors, the exhalations, and other principles, with which the air is impregnated in certain countries, and in certain seasons, are very different in their nature. We may conclude this from the variety of their effects. Sometimes we observe, that it is one class of animals that is affected with an epidemic, and sometimes another. Sometimes man alone is incommoded, and sometimes both man and other animals suffer at the same time from the same state of the air. The nature of these principles, would therefore seem, to be absolutely different, or unable to act in the same manner, and at the same time, on the several species of animals. All these several vapors we have described, and which, either of themselves, or accidentally, become prejudicial to life and health, are introduced into the system, either by the stomach, or the lungs, or the absorbing pores. All these circumstances ought to be carefully attended to. M. de Haen tells us that fatty substances, such as butter, lard, and fat meat, prevent the bad effects of the less active vapors in mines. This is a proof that in certain circumstances the stomach is the first affected.

Besides these exhalations and vapors which are immediately noxious or fatal, the air is likewise loaded at certain seasons with the effluvia of plants, and even with an infinity of minute and imperceptible insects, which may be introduced into our

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bodies,

bodies either directly or indirectly with our food. From these, therefore, may result diseases of various kinds, and even extremely dangerous ones.

These are not the only occasional and noxious contents of the air. The fumes of charcoal have sometimes destroyed several persons at once, in confined rooms where there was no current of fresh air. An infant has been seen to die suddenly from the fumes of a candle being blown under its nose. The fume of lamps is no less dangerous, and has indeed been fatal to many persons. Nothing is more common, nor more dangerous, than to see people sitting in small close rooms with several candles burning, and without renewing the air of the apartment. I have seen many artists, especially in winter, incommoded with the fumes of these candles, and unwilling at the same time to acknowledge it, altho' they seemed to labour for breath even while they spoke to me. The effluvia arising from newly painted rooms have more than once destroyed whole families, or rendered them paralytic. The exhalations from lime and fresh mortar, have occasioned a singular and incessant sneezing which ended in death. Nothing is more commonly known than the fatal effects of the *gas* which escapes from fermenting liquors. I myself have often felt a slight dizziness on going into my cellar, altho' it is by no means one of the best furnished. I was almost deprived of all feeling on these occasions. Others have died suddenly from the same causes.

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The vapor that arises from hay, which heats when it has not been sufficiently dried, carries men off in a kind of intoxication, and especially if the heat is sufficient to break out into flame, as sometimes happens. The fire in such cases is extremely rapid, because it does not begin till the greater part of the hay is disposed to take flame. In general, all these exhalations are as fatal as too strong a dose of brandy would be, and carry off the patient in a state of lethargy, or by a complete and consequently mortal apoplexy.

The air is likewise violently affected by the winds. It is impossible to determine, with precision, the effects of any particular wind, because the same wind will be very different in its effects, at different times, and in different countries. The winds in general are distinguished into sea and land winds. The latter are considered as cold and dry, and the former as hot and humid. There are winds which blow constantly during certain seasons, as the Monsoons for instance. The ancients distinguished all the winds into *Southerly* and *Northerly*. “Of the winds”, says Aristotle, “some were called southerly and the others northerly. The westerly winds were referred to the latter division, because they are cold, and the easterly winds to the first of these classes, because they are warm. These last follow the course of the sun, whereas the others blow in opposition to it. This distinction was regulated by the difference observed in winds, with respect to their being hot or cold.” Such likewise, was the principal division adopted by Hippocrates, relative to the theory he formed of the effects

effects of the winds. It was chiefly from their bracing or relaxing effects, that he considered the southerly or northerly winds, as hot or cold simply, or as hot and moist, or hot and dry, or cold and humid, or cold and dry. This theory seems to us to be much too confined in certain respects. The long sea voyages which were unknown to the ancients, but which now a days expose so many Europeans to the particular winds of so many different climates, render it necessary for us at least to be acquainted with the more general effects of these several winds.

The land winds are in general pretty healthy, because they are dry. But there are some exceptions to this. In the Island of Java, for instance, the land winds are extremely dangerous, because they make an infinitely stronger impression on the heated body in which the perspiration is very great, than happens in Holland in the midst of the coldest winter.

Sea winds are usually considered as the warmest. In general, the air of Islands is much hotter than that of Continents ; but there are many southern countries, that are much colder than others, and this merely from their different exposure to the winds. Sailors commonly judge of the proximity of land, from the increased freshness of the wind that blows towards them. The sea wind brings with it such a burning heat to the Island of Barbadoes, that it can be compared only to that which blows over the deserts of Lybia. Altho' this Island is extremely well cultivated, and fertile in sugar, tobacco and indigo, and is inhabited by more than
fifteen

fifteen thousand English, yet the climate is in general unhealthy. Jamaica is exposed to excessive heats, but the cool sea breezes which set in every morning at ten o'clock render the heat more tolerable. Without these that Island would be a true desert. The sea breezes are of the same use in Batavia. Very hot winds are pretty uniform in their effects in different countries. In 1705, there was felt on the 30th of June at Montpellier a wind so exceedingly hot, that many thermometers were burst, all the Pendulums advanced, and the leaves of the trees were dried up. A refreshing rain very happily removed the fears of the inhabitants. Prosper Alpinus tells us, that the winds are so hot at Grand Cairo, that they seem to flow from a burning source. He adds, that when these winds prevail, the inhabitants become extremely languid, lose their appetite, and are tormented with an excessive thirst, which no liquors can relieve. Strangers are obliged to shelter themselves in subterraneous places, till the violence of these winds are abated.

Kempfer relates, that the winds are so scorching on the borders of the Persian Gulph, that travellers are suddenly suffocated, unless they cover their heads with a wet cloth; but that, if this be too wet, they immediately feel an intolerable cold, which would become fatal to them, if the moisture were not speedily dissipated by the heat. Chardin tells us that the Persians call this *famy-el*, or the poisonous wind. This wind blows from the middle of May, till the middle of August; and not only is fatal to many, but leaves those whom it destroys with all the appearance of life. This wind, which blows at
Baadi-

Baadi-Samuur about the dog days, brings as much heat as if it issued from a volcano. The beasts in the field are suffocated by it. The Arabs preserve themselves from its effects, by covering their mouth and nostrils and eyes. Very fatal winds are likewise experienced on the coast of Coromandel, and other places. It is observable of these winds, that the greater their heat is, the shorter is their duration.

There prevails at Malabar, in April and June, from seven in the morning till noon, an extremely hot land wind, which the best constitutions can with difficulty withstand. The Europeans are particularly sensible of its bad effects; many of them have water poured on them from morning till night, in order to moderate the fire that devours them.

On the other hand, the cold winds produce different effects in different countries. Some writers are of opinion, that the northerly winds are more frequent in Europe now, than they were an hundred years ago. To this cause, many have attributed the greater frequency of diseases of the joints now, than formerly.

There is felt in Spain, a fresh wind, which blows from the mountains of Galicia, and preserves the city of Madrid from the bad effects of the putrid exhalations, with which it abounds so much. But it feels extremely cold and penetrating to the Spaniards, when it blows strongly, or comes on suddenly. It even occasions incurable palsy, when people are exposed

posed to it, after being relaxed by the great heats. The Spaniards call this wind *bubas del ayere*.

The northerly winds, and those from the north east, which are still much colder, are extremely hurtful to every body in Peru. The northerly winds, which blow in Egypt immediately after the very hot winds, are healthy and refreshing; but the eyes of the Egyptians, like those of the Greenlanders, suffer much from these violent stormy winds.

When the north wind, which blows from the Pole, passes over the frozen sea towards Nova Zembla, it occasions such an extreme cold in the parts of Russia it traverses, that both men and other animals would perish by it, were they not to shelter themselves from its effects. Middleton felt a similar cold in North America. At Canton, and Hyschen in China, there sometimes prevails such an exceedingly cold wind, that the inhabitants are obliged to cloath themselves with furs, altho they live on the borders of the Torrid Zone. These cold winds are derived from the mountains in the province of Kittay; the southerly winds, which come from the south pole, likewise bring with them a great degree of cold. They blow exceedingly cold in the freights of Magellan; and Chili would be uninhabitable, were it not refreshed by these winds. In general, the winds from every quarter, which blow over considerable tracks of ice or snow, are cold.

The easterly and north easterly winds are commonly dry. They bring with them but few exhalations,

lations, and dry seasons are, in general, the effects of these winds. On the other hand there are winds which are exceedingly humid, such as the westerly and south westerly. But these winds are not always equally moist, because this depends on the surface over which they blow. If they come from the sea, or over large tracts of marshes, they will be humid, and the warmth that accompanies them renders them more active and dangerous.

The winds in general however by agitating and renewing the air of our atmosphere tend to purify it from noxious vapours, and to render it healthy (*h*). But sometimes these changes are so sudden

(*b*) “ Dr. Priestly having observed, that both the air, corrupted by the breath of animals, and that vitiated by other putrid matter, was in a good measure sweetened by the septic part infusing itself into water, he concluded, that the sea, the great lakes and rivers, which cover so large a proportion of the globe, must be highly useful, by absorbing what is putrid, for the further purification of the atmosphere: thus bestowing what would be noxious to man and other animals, upon the formation of marine and other aquatic plants, or upon other purposes yet unknown.

“ From these discoveries we are assured, that no vegetable grows in vain, but that from the oak of the forest, to the grass of the field, every individual plant is serviceable to mankind; if not always distinguished by some private virtue, yet making a part of the whole, which cleanses and purifies our atmosphere. In this, the fragrant rose and deadly nightshade cooperate: nor is the herbage, nor the woods that flourish in the most remote and unpeopled regions, unprofitable to us, nor we to them; considering how constantly the winds convey to them our vitiated air, for our relief, and for their nourishment. And if

den and considerable, that great cold comes on in too quick a succession to heat, so that very opposite temperatures of the air may take place in the space of a day, and this will be liable to occasion effects that will be more or less dangerous according to circumstances.

The winds may become exceedingly noxious, from the unhealthy principles of the air which they take with them in their course. Altho' in general the winds do not traverse a vast extent of country, and the sea and land winds, are commonly opposed to each other, yet sometimes they have been known to blow over immense tracts of land and sea, carrying the seeds of the most fatal epidemics into remote countries.

There are some winds, which are almost peculiar to certain provinces, and blow very rarely in others. In some, the northerly, and in others, the southerly winds are the most prevalent. The same wind will be hot in one country and in a certain season, whilst it is cold at the same time in another; or it will be dry perhaps in the one, and wet in the other. All this proves how impossible it is to form

if ever these salutary gales rise to storms and hurricanes, let us still trace and reverte the ways of a beneficent Being; who, not fortuitously, but with design, not in wrath but in mercy, thus shakes the waters and the air together, to bury in the deep those putrid and pestilential *effluvia*, which the vegetables upon the face of the earth, had been insufficient to consume."—Sir John Pringle's *Discourse on the different Kinds of Air*.

a satisfactory theory of the effects of particular winds.

The cause of winds will sometimes throw some light on the healthiness or fatality of their effects according to places and circumstances. This theory does not, indeed, seem to me to be, as yet, sufficiently established, to afford any certain conclusions. I will relate in few words, what seems to have been said with the greatest probability on the subject.—The rarefaction of the air may be the cause of wind. The denser air of subterraneous places finding more freedom from the rarefaction of the air above, has a natural tendency to expand itself, supposing it to contain no principles which weaken or wholly destroy its elasticity. This subterraneous air will therefore spread itself with more or less force and rapidity, according as the rarefaction of the air above is in a greater or less degree, and proportioned to this will be the wind. The heat which may be excited in different matters within the bowels of the earth, may likewise, occasion a rarefaction of the subterraneous air, which will be forced out with considerable rapidity. The air of the atmosphere, violently agitated, may likewise give rise to other winds.

The waters within the earth, and the immense strata of pyrites, which are the great fuel of subterraneous fires, will likewise agitate and rarify the internal air, which will be driven out from these laboratories of nature with excessive explosion. The water that exhales from the sea, and rivers, and lakes,

together with the melting of the snow and ice which cover immense tracks both of earth and sea, will all co-operate in the production of winds. The rarefaction of a considerable portion of the atmosphere, is sometimes the occasional cause of the most impetuous hurricanes; this particularly happens in the case of earthquake. The matters which occasion the eruption, weaken or destroy the spring of the air to such a degree, that the more distant air rushes towards this point with wonderful rapidity and force.

But the principal cause of the agitations of the air which produce wind, is to be sought for, according to the celebrated Muschembroeck, in the effervescence of various exhalations and vapors, which concentrate and mix together with more or less activity. It is a truth, that the moment two different exhalations mix and effervesce together, they expand and generate an elastic vapor, do themselves, acquire a greater spring, and thus act with a proportionate force on the circumambient air. The greater part of these effervescences excite heat, and this is the reason why, in storms, the air is usually warm, whether they occur in summer or winter. To these same causes likewise are to be ascribed thunder storms, and even the fall of lightning in the sereneest and the calmest weather, when no cloud appears. This too is the reason why the most violent storms suddenly arise in the midst of the most perfect calm, as is often experienced, to the great danger of sailors, in the Mediterranean; and on the continent in every country. This is the
rea-

reasoning of Muschembroeck. But electricity is now known to act so great a part in the phenomena of nature, that perhaps, all these ought to be referred to that principle (*i*). It is very certain that this matter, whatever may be its true nature, seldom manifests itself without an extreme degree of violence and activity; but natural philosophy is not yet sufficiently enlightened, to determine with precision how this matter contributes to the formation or activity of winds.

Every day's experience proves to us that the vapors and exhalations with which the air is loaded, are not always in conformity to the serenity of the heavens. The meteors which appear under the clearest sky, and the mischievous effects produced by their explosion, seem to prove that these vapors may be a long time, and in great quantity, in the atmosphere, without its being either obscured or agitated by their presence. The most lowering and threatening sky, often becomes clear, and the clouds are dispersed without either wind or tempest: it is therefore, only by their effects, that we can judge of the presence of these principles in the air. We have reason to conclude, only, that they must necessarily act with an enormous force, to produce

(*i*) The learned and ingenious Signior Beccaria, does this.—He even refers snow, hail and rain to the same cause.—See his *Elletricismo artificiale e naturale*, and Priestley's *History of Electricity*.

winds which overturn the largest trees (*k*), as happened within these few years at Saumur ; and even towers and considerable edifices.

In general, a moderate wind, whether it be cold or hot, is never of itself so pernicious as when it is violent. The wind is prejudicial to health, only in as much as it is either too dry, or too moist ; too hot, or too cold ; or as it brings with it accidental principles, from exhalations, which are foreign to its nature. As there are many countries in which the

(*k*) The ingenious writer of *the Account of the European Settlements in America*, gives the following striking and melancholy picture of a West Indian hurricane. "It is in the rainy season, principally in the month of August, more rarely in July and September, that they are assaulted by *hurricanes*, the most terrible calamity to which they are subject from the climate. This destroys, at one stroke, the labours of many years, and frustrates the most exalted hopes of the planter, and often, just at the moment when he thinks himself out of the reach of fortune. It is a sudden and violent storm of wind, rain, thunder and lightning ; attended with a furious swelling of the sea, and sometimes with an earthquake ; in short, with every circumstance which the elements can assemble, that is terrible and destructive.

"First they see, as a prelude to the ensuing havock, whole fields of sugar canes whirled into the air, and scattered over the face of the country. The strongest trees of the forest are torn up by the roots, and driven about like stubble. Their wind mills are swept away in a moment. Their works, the fixtures, the ponderous copper-boilers, and stills of several hundred weight, are wrenched from the ground, and battered to pieces. Their houses are no protection. The roofs are torn off at one blast, whilst the rain, which in an hour rises five feet, rushes in upon them with an irresistible violence."

winds

winds are pretty regular and uniform, it will be right to attend to the times, at which they begin to be felt, and to the countries from which they blow. In countries where the winds are irregular, and depend on unknown causes, the causes of prevailing epidemics will be more difficult of discovery.

Notwithstanding all the qualities more or less noxious of the air, and the different phenomena that result from them, Man lives and enjoys his health in every country of the earth. In length of time, Europeans accustom themselves to the heat of Carthage, and as people advance in life they resume the appearance of health. The natives of an unhealthy climate support it much better than the strangers do who come amongst them. The inhabitants of Malabar bear very well with their air, and notwithstanding the diseases that prevail with them every year, great numbers of them live to be very aged. But the Europeans who come amongst them, find their health extremely incommoded, and commonly experience a very dangerous fever, after their arrival. The Danish missionaries seldom attain their fiftieth year, and indeed the greater number of them die before they have been there four months.

It was observed, that the Russians who were at Berlin after the taking of that city, were unable to support, without shuddering, the cold which is usual there in autumn, and which does not sensibly affect the inhabitants. A temperature of climate, to

which

which we have never been accustomed, is every where insupportable.

Hippocrates, Sydenham, and others of the best observers, have remarked that the same epidemical diseases have prevailed under very different states of the air. There may doubtless, in epidemical diseases, be certain common or particular characters which depend on causes that are but little, or not at all known, and which, are therefore so many exceptions to general rules, so long as they continue to be unknown to us. According to the observations of Mr. Albrecht Stapfer, the village of Oberwyl in the canton of Berne, was attacked in the year 1749 with a most violent dysentery, whilst the other neighbouring villages continued in perfect health. In the following year this village was free from the attack, altho' it made great ravages in all the neighbouring ones, and yet it is separated from them by no forest or mountain. I have occasion, almost every year to observe something like this. Whilst I am now writing, the dysentery is very fatal to one of our villages, where it began to appear seven weeks ago, and yet others in the neighbourhood are perfectly free from complaint (a) Notwithstanding-

(a) The dysentery like all other contagious diseases is spread by communication with infected persons, cloaths, privies, &c. and therefore it is not strange that one village should escape, if its inhabitants were careful to avoid a communication with their infected neighbours. Sir John Pringle relates a curious

standing all this, however, there are certainly very often known causes, why any particular disease is more prevalent in any particular place, or in any particular season, than in others, altho' a particular temperament of the atmosphere may occasionally give malignancy to a disease, that is not dangerous of itself, and vice versa.

Thierry has demonstrated, and indeed the observations we have related, prove, that the air may be very different in neighbouring countries. Sydenham observes, that the disease which is the most prevalent at the time of the autumnal equinox, commonly gives its particular character to the remaining diseases of the year. Lord Bacon recommends it to us, to seek for the causes of a prevailing epidemic, less in the present, than in the preceding state of the atmosphere. I have often had occasion to see the propriety of this reflection.

fact which confirms this doctrine. He informs us, that three companies encamped at a small distance from the lines, and thus removed from the contagion of the privies, almost entirely escaped the dysentery, only one man having been taken ill of it, whilst the distemper raged considerably amongst the main body, and yet says he, "these men breathed the same air, the contagious part excepted, used the same victuals, and drank of the same water". This immunity continued for six weeks, when these companies joined the rest of the army, and were at last infected.

It

It cannot be denied, however, but that there is something regular and constant in the effects of the different qualities of the air. I have, I think, sufficiently proved, that certain qualities of the air are uniformly noxious, both to Man and other animals in every climate. This proves the truth of an observation made by Hippocrates, that there are times when almost all the diseases that occur, are extremely malignant, and in general fatal: so that, coughs, phthisis, angina, are all equally mortal. The same venerable writer, assures us likewise, that the truth of his observations had been confirmed in countries very different from each other, and in a variety of seasons and climates.

With regard to the manner in which meteorological observations are commonly made, there seems to be a manifest error in estimating the sensible qualities of the air only by the variations of the barometer or thermometer. The writers who have aimed at informing themselves in this manner of the constitution of the air, have confined themselves to matters which could yield them no other information, than that of the momentary state of the atmosphere: and it is not to this, but to the continuance, or excess of the same temperature, that the attention of the physician ought to be directed; because the epidemics which result from the temperature of the seasons, never take place but from these two causes, and it was in this way, that Hippocrates aimed at tracing the source of epidemics. Each season seems to have

a character peculiar to itself, and consequently has a certain and peculiar influence over the living body, as Hippocrates very well observed. This is the cause to which we are to ascribe the diseases of the seasons, and if they vary greatly from their uniformity and order, an epidemical disease may naturally be expected.



C H A P. VI.

Of Aliment, considered as a remote cause of diseases.

MEN suffer from errors in diet, not so much from their ignorance of the uses and properties of aliments, as from their inattention to the effects of these errors. The antients used to say, that acute diseases came from heaven, but that chronic complaints were the offspring of our irregularities. A modern writer has very well observed, that the stroke of death is inflicted by the hand of providence, but that we ourselves embitter it by our bad conduct. All must die: this is a law to which all the animated beings of this globe are subject, but the lingering agonies which lead us on to the grave, are commonly the effects of our own follies.

Bread is a very general article of our food. There is not indeed much to be said on the subject of bad bread; I have observed, however, that it is often very hurtful to children, and that it gives them a pale countenance, and breeds worms. Shebbeare is of opinion, that the rickets are so common in France
amongst

amongst the children, only because they eat bread, which by its acidity destroys the calcareous substance of the bones, and reduces them to a state of cartilage. This disease is not less common with us, but I ascribe it to a very different kind of acidity, of which I shall speak hereafter.

The avarice of the London bakers has led them to an invention which is extremely prejudicial to the health of the community, and this is the putting alum into their bread, in order to make it unnaturally white. These people having discovered that their bread generally occasioned costiveness, thought of obviating this complaint by mixing jalap with their flour, and this had indeed a purgative effect. Dr Maningham has taken great pains to point out the different methods of sophisticating bread, together with the marks by which they may be ascertained, and the diseases that result from them.

It sometimes happens that bread, naturally, and without any human artifices, becomes extremely noxious to health. This may happen when the corn fields abound with *Darnel* (*Lolium*) or with *Cockle*, (*Agrostema Githaco*) or when the corn itself is smutted.

Darnel, in the opinion of the best botanists is a very poisonous plant, and in cold damp seasons it grows in such abundance in the fields, that the ignorant farmer fancies all his corn is transmuted into Darnel. The seeds of this plant, when powdered,
are

are a little dark coloured, and of a sweetish taste; but it is difficult to distinguish flour that is poisoned with it from any other. Its effects are to excite uneasiness, vomiting, vertigo, delirium, convulsion, and palsy (*b*). Targioni tells us that he saw, with no little astonishment, much of this plant cultivated in the neighbourhood of Camuglian, where the inhabitants, in order to give their bread an agreeable taste, mix it with it, in the proportion of one sixth part, and this without seeming to have their health affected by it.

Needham describes two sorts of cockle; in the one, the seed is converted into a black powder; and in the other, there are perceived little elastic fibres, which have been considered as *Animalculæ*. M. de Jussieu ascribes the first sort to the corruption of the seed, and the second to the corruption of the flower. This seed gives a very bitter and intolerable taste to bread, so that it seldom occasions an epidemic disease, because the people do not willingly eat such bread. In France, however, bread of this sort has been known to occasion gangrene.

(*b*) The ancients who were acquainted with the bad qualities of this plant, supposed it to affect the eyes, by rendering them dim. *Ovid* seems to allude to this, in the following verse,

Et careant soliliis oculos citiantibus agri.

Fast. lib. 1.

Smutty

Smuttery Rye is the effect of a cold season, and when made into bread becomes a true poison (c). The limbs, and especially the feet and legs, of those who eat it, are first benumbed, and then gradually assuming a black colour, become hard and as fragile as glass, till at length they separate from the rest of the body, before this seems to be attacked. Dodart examined this corrupt corn with great accuracy. He found the ears black on the outside, but of a whitish colour within, and of a much harder texture than the natural rye, being indeed somewhat tough. This smuttery rye has by no means a bad taste, and these diseased ears are as large and as long as the best.

Dr. Lang, Physician at Lucerne, in a very ingenious dissertation on this subject tells us that the grains of bearded or smuttery rye (d) are so many preternatural excrescences, of a dark complexion, hard, combustible, and more or less long and thick, affording a little of the taste of rye, which leaves, however, a slightly acrid impression on the palate. Within, he has found a minute and almost invisible worm. In general there are six or seven of these excrescences in an ear of rye, but in very wet seasons, the number is sometimes increased to twelve or more.

(c) Hoffman speaks of the *secale corniculatum nigrum* as a poison.

(d) The French call this degenerated rye *ergot*, from its resemblance to a cock's spur.

It has been remarked in France, that rye becomes smutty in the greatest quantity, in a cold, damp soil, and in very rainy years; and that the sort of rye which is sown in March, and with us called summer rye, is far more subject to this disease, than that which is sown in autumn, or the winter rye. Mr. Chatton, a Surgeon at Montargis, tells us that the rye is diseased in this manner almost every year in Sologne, and Berry, especially in light and sandy land; that there are few years in which this does not happen; but that these unhealthy grains do no harm, unless when in considerable quantity; and that they commonly appear most when a wet spring is succeeded by a very hot summer.

Smutty Rye is however not always poisonous. Dr. Lang had occasion to observe that the rye bread which contained a certain quantity of these diseased grains, produced none of its usual bad effects. He therefore concludes, that it is noxious, only when the excrescences we mentioned are long, and large and thick, and when they appear in a wet season.

Theodore Zwinger the elder doubts whether gangrene be really the effect of smutty rye, because it grows in considerable quantity in the canton of Basil, where it is sent to the mill with the other rye, and being made into bread, is eaten without any inconvenience. But Baron Bondeli, the Prussian minister in Switzerland, observed in one of his letters to Dr. Lang, that the physicians at Berne had at first considered the diseases we have mentioned, as the effects of a particular state of the air; but had

been convinced by a great number of very accurate experiments, that they ought truly to be referred to the corrupted rye. Ritter complains also, that at the beginning of the present century, the disorder which arose from this same cause, was likewise attributed, by the physicians at Berne, to the excessive cold, to the want of cleanliness amongst the peasants, and lower class of people, and to their improper diet; and yet it is certain, that this diseased corn kills many animals, and that its fatal effects on man have been often experienced. This diversity of opinion seems to arise from the smutty rye, as we have related, not always producing the same effects.

These diseases were noticed in France in the 16th and 17th centuries; but they made the most considerable ravages towards the close of 1709. Lemery tells us, that from the use of this bearded or smutty rye, the limbs blackened and detached themselves from the sound parts, and that no remedies were found capable of stopping the progress of the disease. There were many melancholy examples of these effects in the French hospitals, particularly at Orleans. The French academy of sciences, published, some years ago, an account of the gangrene produced by these means. It is impossible to read this account without shuddering. A hog died soon after being fed with this bad corn; all the limbs of this animal became gangrenous. In the patients who were in the hospital at Orleans, the mortification sometimes spread only to the knees, sometimes it reached to the thighs; the lower extremities were found to be the most commonly affected.

fects. Amputation seldom succeeded in these cases. Of an hundred and twenty patients whose legs were taken off by the French surgeons, not more than five escaped. This is what we are told by the academy (a).

Similar effects have been observed in Germany, tho' in a less degree, from the use of grain of this sort. This disease has likewise raged with great violence in the cantons of Zurich, Berne, Lucerne, and Fribourg. It was extremely fatal in the first of these cantons in 1716. In 1709 it appeared in the county of Lenzbourg. In the canton of Lucerne, it occasioned the greatest distress in 1709, 1716, and 1717. In the first of these years there were fifty persons attacked with it within a very little district, forty-nine of them were happily recovered. The greater part of those who were early in the use of suitable remedies, did well. Others, who were more careless, escaped with the loss of their toes, or of some of their fingers, or a foot, or a whole limb. This evil seemed to be at its greatest height in 1709, when the miserable peasants were unable to

(a) The reader will probably recollect an account of a poor family at Wattisham in Suffolk, afflicted with the loss of their limbs, described in the 52d vol. of the *Philos. Trans.* This disorder, and that recorded by the French academy, were indeed extremely analogous in their effects; the poor family at Wattisham ate no rye, but their bread was made from a sort of damaged wheat, which by the country people is variously called clog wheat, or rivets, or bearded wheat.

guard against it, by the extreme scarcity of wholesome bread.

Dr. Lang who has given us an excellent description of this disease, has likewise taught us how to cure it, but as this does not enter into the plan of my work, I beg leave to refer the studious reader to the dissertation itself (b). This disorder was in general preceded by no fever, but with a sense of weakness, which was felt either in the thorax or abdomen. If in the thorax, the upper limbs were threatened with the attack; and if in the abdomen, then the lower limbs were likely to suffer. Some patients complained of this symptom two, three, and even four weeks before the disorder actually manifested itself; others felt it only a few days, previous to the attack. There were some who were at once seized with the most terrible symptoms without any previous notice; and in the canton of Lucerne, some few persons lost one or two of their toes without having felt the least pain or inconvenience. The moment the disease had actually taken place in any limb, it grew cold, and lost all sense of feeling, and the skin became pale, livid and wrinkled, and the cutaneous veins disappeared. The other parts seemed to be unaffected, the functions of the body remaining undisturbed. When the limbs were wholly benumbed, the patients complained of excessive pain, but this pain excited only a slight degree of fever;

(b) Beschreibung des schädlichen genusses der Kornapfen, Lucerne, 1717. 8vo.

the patients sleep was always much disturbed ; some complained of thirst, and others bled incessantly at the nose ; their urine was almost constantly clear and limpid, few of them complained of head ach, nor did any of them fall from their appetite. The pain of the diseased limbs went on increasing, together with the other symptoms, and in cases in which remedies were inefficacious, the mortification spread from the fingers to the hand and arm ; and from the toes, to the foot and leg, till at length the diseased parts separated from the healthy. From all these observations Dr. Lang was led to conclude, that this poisonous rye differs from the generality of poisons in its effects on the system. We see it carried through all the nobler organs of the body without exciting in them any sensible injury, if we except a slight stupor, of which some of the patients complain : it occasions none of the alarming symptoms, to which almost all the other poisons give rise : it brings on no spasms, no stricture of the breast, no syncope, or fever : but yet, notwithstanding all this, it is to be arranged amongst the slow and hidden poisons, for it occasions no sensible difference in the taste or smell of the bread, and it is liable to continue a long time in the body without manifesting any effects, and these when they do appear, are sometimes so sudden, that they become fatal before any remedies can be thought of.

Altho' this sort of corn is of all others, capable of being the longest preserved, yet meal of every kind is very susceptible of corruption, and becomes a very dangerous aliment if long kept,
and

and in a damp place. The most fatal effects have been experienced from corrupted meal, even in countries the best supplied with provision. It yields a very noxious and penetrating vapor, and a person worthy of credit, assured me not long ago, that he had been present at the dissection of an unfortunate poor man, who together with a wife and three children, were supposed to have been suffocated by a vapor of this kind. The lungs, stomach, and intestines appeared as if in a gangrenous state.

Worms and the different insects which generate in flour that has been long kept, are no less noxious by the changes they occasion in this aliment, and which by their presence is rendered still more dangerous. And yet this, poisonous as it is, is the food with which the poorer class of people are nourished, because it is the cheapest.

In many countries, rice answers the same purposes as bread does with us. It is the principal food of the Turks. The Chinese make use of it instead of bread, altho' their country abounds with corn. Rice is also almost the only article of nourishment amongst the Malabars: it is even used as bread by people of the highest class, because no wheat grows on the Malabar coast. It is applied to the same use throughout India. The Chinese boil it with water; the Malabars, with milk and water, and eat it in vast quantities. Bontius tells us, that hot rice is very hurtful to the nerves, that a long continued use of it weakens the sight, and even occa-

sions

sions total blindness; and that this is the reason why the inhabitants of Java never eat hot rice.

The other vegetable aliments produce different effects according to their particular nature. In general they seem to be more suitable to man, than flesh meat, and those men seem to have lived the longest, who have eat the least animal food. A vegetable diet seems to render us mild and humane, but is less calculated for a laborious and active life.

We are therefore not to be surprized that Pythagoras should prefer vegetable to animal food; or that the Therapeutists, adopting similar sentiments, should content themselves with bread and salt, adding at the most a little hyssop; and using only water for their drink. The earlier Greeks confined themselves to vegetable food, and are said to have decreed divine honours to Pelagus, who first taught them to eat acorns, which they considered as more healthy than the other vegetables they had been accustomed to (c).

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(c) This like many other tales of the ancient writers is probably fabulous. Man from the structure of his teeth, stomach and intestines, would seem to be designed by nature both for vegetable and animal food. Many races of people, who so far from being perverted by luxury, are still in a barbarous and uncivilized state, live almost wholly on animal food; but there are perhaps none who live entirely either on this or vegetables, if we except the Brachman's and some others, who do so merely from prejudice of opinion. Dr. Cullen observes, that

The regimen of the Spartans, is likewise well known in times much later than those, we have just now mentioned; a regimen on which they prided themselves so much that Pausanias, after the battle of Platea, directed two suppers to be provided, the one after the Lacedemonian, and the other after the Persian manner. "Observe," says he, "the folly of our enemies, who accustomed to live in this way, fancied themselves able to conquer us, who live in so different a manner."

Vegetables and butter constitute the principle food of the inhabitants of Bengal, and of Malabar. The traders who pass from the Coromandel coast and Surat, to Batavia, live chiefly on leguminous plants.

All vegetables, however, are not to be considered as innocent: without saying any thing of those which have a decisive tendency to a speedy putrefaction, they are apt for the most part in certain subjects to breed flatus, and much more so than animal food: but as this greatly depends on temperament, nothing general can be said about it. With some people, vegetables have constantly pur-

that the state of the hunter and shepherd, is more simple and more antient, than that of the farmer or gardener. In cold countries men seem to eat animal food in the greatest proportion. This is the case with the Laplanders, but Linnæus tells us, that they obviate its ill effects by a plentiful use of sour milk, and by using *Calla*, *Menyanthes*, and many other plants copiously. In hot climates where there is a greater tendency to putrefaction, vegetable food seems very properly to be used in the greatest proportion.

gative

gative effects, whereas the Minorquins who feed on them so much, are almost always constipated.

The flatulent nature of fruits is well known. Dr. Hales proved long ago, that an apple contains 480 times its bulk of air. Yet I consider baked apples as a light food, with which, and bread and water, I should be able to live without any danger of flatulency or hypochondriacal affection, if such a kind of life was pleasing to me. The too free use of unripe fruit occasions cardialgia, colics, diarrhoea, and nervous disorders.

The dysentery is almost universally ascribed to fruit, although all true physicians have so clearly proved this opinion to be erroneous. The causes of this disease are in a great measure to be sought for in the state of the air, which by a sudden transition from heat to cold, checks the insensible perspiration, and occasions increased determination to the intestines. If the humours there are acrid, dysentery will take place, and even in people who have eaten no fruit; for we have often occasion to see this disease manifest itself, at a season when the fruit trees are as yet in flower. It sometimes prevails likewise in cold countries where there is but little fruit, and where the bulk of the people of course cannot procure it.

It has been very properly remarked, that the dysentery is sometimes occasioned in autumn, by the insects that are swallowed with leguminous plants, and even with fruit. Decker, who has written an

excellent dissertation on this disease, tells us it was impossible that fruit could in any way have contributed to the dysentery, of which he gives us the history, and which made so much havoc. He observes, that very often when there is the greatest plenty of fruit, there is no dysentery; that he has seen it attack persons, who had never eaten any fruit, and even infants at the breast whose mothers had carefully avoided fruit: that the dysentery which was so prevalent and fatal at Nimeguen, had attained its highest degree before any fruit was in season, and in fine, that they who ate fruit, and they who did not, were indiscriminately attacked by it.

Every day's experience leads to prove, that the summer fruits never occasion dysentery. Dr. Tissot, asserts that no prejudice is more erroneous than this, and that only obstinate and of course unenlightened people can possibly support it, because ripe and especially the summer fruits, are the true preservatives against the dysentery (a). This proves
how

(a) Dr. Tissot always made it a rule in those seasons, in which dysentery was most frequent, to eat little flesh meat, but much fruit; and he affirms, that he never had the slightest attack of the disease: and that other physicians of his acquaintance, who used the like precautions, were equally free from the infection. He tells us, that he saw eleven patients in one house attacked with dysentery, nine of whom were tractable, eat fruit, and recovered. The grand mother, and one child whom she loved particularly, and whom she managed in her own way, with burnt wine, spices and oil, but no fruit, died. In the year 1751, the dysentery having destroyed almost a whole regiment in the south of France, the officers at length purchased the entire crop

how justly in general that man thinks, who rejects the opinions of the multitude.

Experiments seem to prove that grapes contain an immense quantity of air. It is certain, that they prove extremely flatulent to delicate people who have not an open belly. I have indeed seen a man swell and die suddenly after eating a prodigious quantity of grapes; but this person had been subject to the convulsive disorder, we call St. Vitus's dance.

Oily aliment derived from vegetables is exceedingly noxious, and sometimes occasions a real epidemic; especially if much fat and oily animal food is used at the same time. This seems to be the reason why the itch prevails so constantly in the Hebrides (*b*). In Lower Saxony, where people live nearly in the manner that hogs do with us, turnip oil is a very general and most nauseous article of food. The religion of some countries prohibits certain religious orders, the use of animal fat or butter. These people therefore prepare all their cookery

of several acres of vineyard, whither they carried the sick soldiers, and gathered the grapes for those who were too weak to be taken to the field. They who were well, likewise, lived chiefly on grapes, and after this says Dr. Tissot, not one man died, nor were any more attacked with the disorder.

(*b*) The lower class of people in the northern parts of Scotland, and in the Hebrides, get but very little animal food. In the latter they eat great quantities of fish, but both there and in the Highlands, there is a great consumption of milk and vegetables.

with oil : and this is the reason why so many of them are subject to ruptures. Great numbers of them likewise void their urine in their sleep ; so great is the relaxation produced in all the viscera by the extreme use of oil (c). I have observed that oil is in general very hurtful to persons who have weak stomachs, and that in these it has constantly the effect of increasing indigestion.

Milk seems to hold a middle place between the animal and vegetable kingdom. In certain circumstances it is the best of all aliments. Hence the supreme Being seems to have intended it for our first nourishment. Human milk is indisputably the sweetest and most fluid ; next to this comes asses milk, and in succession mares milk, and goats milk. Cows milk contains the least saccharine matter, and is the least fluid of any (d). It is observable however, that the most fluid milk throws

(c) There ought to be taken into the account here, that these religious orders are prohibited the use of every sort of *animal* food, and are therefore confined to fish, and vegetables, which they prepare commonly with oil. A moderate use of fresh oil is a very useful article of diet, when we take with it a proper proportion of animal food ; and it is observable, that in Languedoc and Provence, where there is a great consumption of oil amongst people of every class, there are no bad effects seen to arise from it.

(d) This ought rather to be said of goats milk, which ought in this respect to be placed after cows milk, as being less sweet and fluid, so as not to be easy of separation, and never spontaneously throwing out a cream, as is the case with the other milks.

out the thickest and the firmest cream: this seems to be the reason why cheese prepared from the thinnest milk is commonly the firmest.

Rousseau says it is a folly to fear any ill effects from the milk's curdling in the stomach. He is right in this, because it is a natural and constant effect. The milk that children throw off their stomachs by vomit, is constantly in this state; the excrements of young animals could not have a firm consistence, if the milk they take did not coagulate. It may be argued from this, that milk is not adopted to every stomach, but not that it is unhealthy because it curdles.

An English physician started this objection long before Rousseau: he was answered, that it was a known fact, that many persons had been attacked with considerable pain, and even convulsions and death, from taking some acid substances after milk, and that on this account the coagulation of milk in the stomach was unwholesome. Another English writer observes, that cows milk becomes sour and coagulates spontaneously after standing only twelve hours when the weather is hot, and that of course it cannot be denied but that milk naturally curdles in the stomach, but that in general no ill effects result from this: the colics, and green stools, which are so frequent in children, arising wholly from some defect of the bile, which is known to have so much influence on digestion, the moment the aliment passes into the intestines. The conclusion of this last writer is, however, by no means complete.

The

The green colour of the stools is indeed owing to a particular state of the bile. But to what cause are we to ascribe the latter? Signior Zeviani, an ingenious Italian tells us that chymical experiments prove the foeces to become of a green colour, by the acidity and corrosiveness they acquire in their passage through the intestines, and that by these means the bile becomes as green as when we mix it with the nitrous acid. This effect is therefore to be explained by the acescency of the milk.

It is of importance to be known, that milk, altho' it be more easy of digestion than any other aliment, is likewise the most hurtful, when imperfectly or not at all digested. Infants never vomit milk when their stomachs are able to digest it.

Boerhaave blamed the conduct of women who boil the milk they intend for their children, in order to correct an imaginary crudity. He tells us, that milk is spoiled by boiling, because the heat throws off its most wholesome and fluid parts, and he therefore recommends it to be given with bread without being boiled (e). A physician who should de-

(e) Many writers have supposed a spir. rector. in milk which evaporates by boiling, but this is perhaps mere y imaginary or of little consequence. Boiled milk is found to yield more foeces than raw milk. Dr. Cullen ascribes this to the milk's being

deliver such a doctrine in Switzerland, would perhaps be in danger of his life, from the rage of some good women.

Indigested milk leaves a hard cheesy substance, which nature is unable to assimilate, and hence arise colics, cardialgia, convulsions, and even death. In other circumstances, the intestines become distended with flatus, so as to render the abdomen extremely hard; the glands of the mesentery become obstructed, the foeces pass through without affording any nutritious matter, and the patients die from inanition.

Boerhaave sought for the cause of these ill effects in the inactivity of the bile, which from a want of due energy is unable to resolve this hard and cheesy matter. It is well known how much they who have weak stomachs, and above all hypochondriacal and hysterical patients, are liable to suffer from a milk diet, altho' some of them do indeed adopt it with impunity: It was on this account that professor Winter of Leyden thought a milk diet was improper for gouty people, if they have naturally weak stomachs, or are of a very irritable habit, subject to

being thoroughly blended by the heat, it being well known that milk kept for some time exposed to the air, has advanced so far towards a spontaneous separation. Again, when milk is boiled, a considerable quantity of air is detached, as appears from the froth on the surface, and air is the chief instrument of fermentation in bodies, so that after this process it is less liable to acrescency.

spaf.

spasmodic acescency; because the acescency of the milk will in these be likely to produce the worst effects.

The effects of indigested pap are no less fatal to children. I am aware that pap constitutes the principal aliment of millions of children, and I am at the same time sensible that an infinite number of them are carried off by it. I have already said this; hence arise the vomiting; incessant colic; diarrhoea; frothy, grey, yellow, green, or dark coloured stools; swelled belly; worms; the frequent cardialgia; and the convulsive affections which sometimes carry off children before my eyes; together with all the other symptoms which the physicians of every country see and describe, and in vain attempt to prevent or cure, because in this they have to encounter with the obstinacy and prejudices of all the old women. It would be less difficult to transport the Alps into the vast plains of Asia, than it would be to convince these good ladies of their error.

I have seen all these accidents; sometimes separately, and sometimes combined together in considerable numbers, and I have constantly traced them to the same source. I have in many cases relieved children from these complaints, and they would indeed wholly disappear, if parents would listen to reason and the advice of those who have no other view than to do good. They ought to reflect that prejudices in a matter of this sort are criminal, and that they are accountable for them to the supreme Being, and to society. A little weak broth, or bread and milk,

milk, would be free from all these dangers. But it is to no purpose that we advise. The prejudice that prevails in Switzerland and other countries on this subject, is the reason why the rickets is so prevalent amongst children. This disease (a) which first appeared in England about the middle of the 16th century, is attended with considerable appetite. The children, who are afflicted with it, eat much, but at the same time lose their flesh : their belly is generally hard and tumid : their limbs and trunk gradually become bent and unable to support them, whilst their head and abdomen, and some other particular parts increase considerably in volume. Children are very rarely attacked with this complaint before the sixth month, tho' I have sometimes seen it happen before that age, in Switzerland. In general it makes its appearance in children of two or three years of age, and if it be not well cured, as is too often the case, it leaves behind it glandular obstructions which very often terminate fatally.

(a) Foreign writers, speaking of this disease, frequently give it the name of *Morbus Anglicus*, or the English disease; and this is the case with Dr. Z. from a supposition that it is of English origin. They have indeed for this opinion the authority of our countryman, Glisson, who in his famous work *de rachitide* says, " Innotuit autem primum hic morbus (quantum quidem ex alioem relatione, diligenti facto examine, colligere patuimus) Angliæ tractibus, in comitatu scilicet Dorset et Somerset, triginta circiter abhinc annis". Pag. 3. edit. Lond. 1666. There can be no doubt however, but that this is a disorder common to many countries, and of a very antient date. It seems indeed to be very clearly described by Hippocrates in the 2d chapter of his book *de Articulis*.

Dr. Zeviani, an ingenious physician at Verona, published not long ago, an ingenious work on this disease, which is by no means unfrequent in Italy. His observations agree entirely with ours. He considers it as a disorder in which all the parts of the body are affected by a peculiar acrimony, which he ascribes to the corruption of the milk with which children are fed. He is of opinion that this, when in a less degree, is the source of other infantile diseases; and of the rickets when in its highest degree. I agree with Zeviani in the fundamental part of his argument; but I confess myself to be of opinion, that the absurd use of pap brings on this disease much sooner than milk (*b*).

Vandermonde, was likewise of opinion, that pap was a very unhealthy food for infants. " This in-

(*b*) This is surely not the only remote cause to be sought for in this disease, which is known to occur chiefly in moist and unhealthy situations, and very often from the negligence of nurses in not exercising their children sufficiently. It is frequently the consequence of other diseases; such as the small-pox, measles, and above all of intermittents. Sydenham having remarked that excepting those years in which autumnal intermittents were predominant, the rickets rarely occurred. Dentition and morbid irritability may likewise have a share in determining the complaint; nor should the age, diseases and mode of life of the parents be forgotten; all these circumstances, together with many others which might be mentioned, prove that Dr. Z. Zeviani, and others, are not sufficiently authorized in their opinion of its being solely occasioned by a particular mode of diet.

" digestible

"digestible mixture", says he, "of milk and flour which has not fermented, forms a mass in the stomach which undergoes no other change than what leads it back to its original acescency". The reader will do well to consult him on this subject. Plutarch tells us, that the Spartans fed their children very sparingly, that they might grow the more.

The Swifs eat but little butter, in comparison with what is consumed in Holland and England. It is never introduced at table. In Lower Saxony, and Brandenburg, where, by way of supper, people content themselves with bread and butter (of which, by the bye, they are as fond as the English are of their punch) and they often experience the ill effects of this, as their butter is salted, and very often rancid. This occasions heart burn, and a disagreeable taste in the mouth. It is certain that butter, and especially fried butter, may occasion many inconveniences.

Butter, which is the more oily part of the milk coagulated by an acid principle, is extremely liable to acidity and rancidity; and as butter becomes so spontaneously, it will be easy to conceive how much sooner it will do this in the stomach. In many subjects it excites nausea, painful cardialgia, and even vomiting. Like oil it relaxes the solids when taken in considerable quantity. Notwithstanding this, however, good fresh butter may be useful, taken in the morning, and drinking with it some light wine. It can then do no harm, except by its

quantity, or by the bad state of the stomach of those who take it (c).

There is less consumption of cheese in Switzerland, than in Germany, or Holland. I have often smiled when they spoke to me, at some of the German tables, of cheese, as a subject which was not beyond the sphere of a Swiss. We have two sorts of cheese, hard and soft: of these the former seems to be the most wholesome. It increases the appetite; but when used too liberally, occasions cardialgia and even prevents sleep. The green cheese, which we call *Schabzieger*, is the strongest cheese of this sort, and is likewise the most hurtful. The soft cheeses are the most savory, but they load the *primæ viæ* with an indigestible and insoluble matter, and hence arise many inconveniences. All our hard drinkers, and likewise the idle and lazy amongst our lower class of people, eat great quantities of this cheese: on hearing them speak, one would think they have always a morsel of cheese in their throats, which does not ill agree with our guttural accent. There are even some of our better sort of people who prefer this cheese, especially when it is rotten. This partakes indeed too much of the Swiss, but we know that the Romans were fond of *asafœtida*, and that the Indians of these days consider it as a delicacy.

(c) Dr. Cullen, speaking of butter, is aware of the disorders it may produce in the *primæ viæ*, by its rancidity; but he thinks we ought to prefer good fresh butter to the imported oils, which by not being fresh, have always some degree of rancidity.

The northern nations, especially those which are nearest to the pole, feed much on animal diet. The Japanese eat no quadrupeds, but live chiefly on water fowl. They use no milk; nevertheless, the Whale, even to its intestines, affords them a delicious repast. Nor are they sparing in their use of other fish: on this account they are often in such extreme want of provisions, that the lower class of people are obliged to content themselves with sea plants, and even poisonous herbs, the effects of which they counteract by their manner of preparing them.

The Egyptians are still more reserved in their use of meat. Some of them eat poultry, but their more common food is milk, and all their meals are very simple. The same sobriety is found to prevail throughout China and India, where meat is very sparingly used.

The Chinese physicians commonly recommend abstinence to the sick; in fevers they will not even allow the patient to eat either meat or fish or eggs. Their permission extends only to rice water, or to rice with a considerable proportion of water, and even of this they are very sparing. They observe that the stomach can never perform its functions while the body is ailing, and that aliment, tho' it be taken in little quantity, will of course be ill digested. The same opinions and practice prevail throughout the whole of the East-Indies, and in Japan. These oriental physicians evince more wisdom in this matter, than those amongst us, who sacrifice to the inclinations and appetite of people of fashion, with a servile complaisance,

plaisance, and very often allow the use of meat when every circumstance of the case forbids it.

Meat of every kind certainly disposes our humours to alkalescency. Animal food sometimes putrifies very soon after it is taken into the stomach. The impression which is made by fire on meat, concentrates its savoury principle, and exalts its salt and oil more or less, in proportion, as the fire is more or less active. Meat fried in butter or oil disposes it the more speedily to putrefaction, as the boiling point of oil is known to be 600, whereas water boils at 212, and therefore a greater degree of fire will be required to prepare meat in this manner.

But of all meats, (*d*) pork seems to be the most alkalescent. The filth on which our hogs commonly feed, affords only depraved juices, and experience proves to us, that these of all animals are the most subject to disorders of the lungs and skin. This is the reason why in all well governed places the hogs are directed to be killed. Birds which live wholly on insects and which are esteemed so deli-

(*d*) This is by no means certain. It is a very succulent and nutritious food, and was therefore given to the *Athletæ*. Both the Jews and Mahometans do indeed forbid the use of pork, which in warm countries is said to increase the leprosy; but of this we have no satisfactory proof, and neither the ancient Greek physicians, nor the Romans with whom this meat was held in high estimation, seem to have complained of any bad effects from it.

cious

cious to the rich, *irritamenta gulæ*, are still more alkalescent. Partridges possess this quality in so high a degree, that it is impossible to feed on them three days together without falling sick. Meat, which becomes putrid in the stomach, occasions considerable flatus; and the same thing happens likewise from indigestion. It will therefore be useful to know whether they who have naturally a weak stomach suffer most from vegetable or animal food.

I make a considerable difference between different meats. Thus the white meat of poultry and veal seems in general to be the most easy of digestion. The meat of young animals is more easily digested than that of old (*e*). Beef, pork, black game, and wild fowl in general, are difficult of digestion; and so is fat meat. The flesh of the wild boar is more easy of digestion than pork, and this because that animal feeds chiefly (*f*) on acorns. Beef, of all other meats, seems to be the least soluble when it is eaten too late: it therefore does harm, not because it be-

(*e*) This opinion, tho' pretty generally received, does not seem to be well founded. The meat of young animals being more difficult of digestion, than that of old; and this, from its being more viscid and gelatinous. Dr. Bryan Robinson relates a remarkable case, which tends to prove this, of a person who accustomed himself to puke in the evening, and who used to throw up veal indigested; tho' of beef there were seldom any remains.

(*f*) Or rather because it is more exercised, and is of a firmer and less gelatinous texture than the domestic hog.

comes

comes putrid in the stomach, which I have never experienced, but because it seems to load it (g).

Shebbeare, seems to go too far, when he asserts that animal food is more natural and analogous to us than vegetable; and that it is likewise more easy of digestion. Zeviani does better in advising a mixture of animal and vegetable substances in cases of hypochondriacal flatulency; because it is not yet determined which of the two are the most flatulent. I know many people who have been exceedingly affected in this way from the use of vegetables, altho' they felt no such inconvenience from veal, wild fowl, poultry, venison, wild boar, or hams, or sausages. Beef, goose, or duck, or hare, occasioned indeed considerable flatus, but by no means so much as was the effect of vegetable food.

From the preceding reflections I believe we may venture to conclude, that meat of every sort will occasion flatus, when it is so alkalescent as to putrify in the stomach; but that this does not happen in every stomach, and that animal food when well chosen is therefore less flatulent than vegetable food. Vegetable food, however, is less stimulating when carried into the blood than animal food, its bad effects, when it produces such, seem wholly to be confined to the *primæ viæ*, and it will therefore be preferable to animal food, when ever we aim at remov-

(g) This is perhaps not quite so applicable to this country, where beef seems to be in the greatest perfection, and much more soluble than it is in many other parts of Europe.

ing and disposition to fever. I have often on such occasions experienced the good effects of baked apples freed from their rinds.

There prevails a very absurd and dangerous prejudice with respect to the jelly of meat. This prejudice seems to be kept up by many of those physicians who practice by rote, and who are too often the supporters of popular errors. They force, as it were, patients who have weak stomachs, and particularly those who are exhausted, to swallow jellies, which are procured in greater quantity from veal than from beef; from mutton almost in the same proportion as from veal, but in less quantity from poultry. Be upon your guard, says Boerhaave, against jellies, if you have to do with a weak stomach, for they digest only with the most robust people, and in weaker stomachs become truly glutinous and insoluble. It is a mistaken notion, adds that great man, to suppose these preparations to be the more nutritious because they are without any additional mixture: it being certain that by dilution with ten times their quantity of water they would be rendered more soluble to a weak stomach.

Fishes in general seem to be less alkalescent than meat, for we are not to attribute to them, effects which are due only to the superfluous spicery with which they are seasoned. Healthy fish seems never to produce these effects. There are many weak stomachs which tho' unable to take in meat, digest sea fish, and even fresh water fish, without any inconvenience. The salmon which ascends our rivers to spawn, frequently excite a cramp in the stomach,

which is easily relieved by vomiting. At these times the salmon appear to be relaxed and sickly, and when they have spawned become covered with pustules. This seems to have been the reason why the Dutch, who eat of them formerly, were afflicted with leprosy ; and why the Egyptians are subject to elephantiasis by feeding on the putrid fishes of the Nile, and of some stagnant waters.

The constant use of fish, joined to the great consumption of other mucilaginous aliment, and cheese, seems to be the cause of the frequency of chronic diseases and of the stone amongst the Dutch.

The Icelanders drink the oil of fish in considerable quantity, and this from its great rancidity, and the alkalascency it occasions in the blood vessels, seems to prove why the small-pox, when introduced there from Denmark, was so fatal, that the patients commonly died on the third day. I am not certain whether from the great number of children observed on the sea coast, and near great rivers, we do right to conclude that a fish diet contributes to population. The observation of Montesquieu on this subject is at least very ingenious, when he tells us that the regimen of certain monks seems to be wholly repugnant to the intentions of their founders.

It is easy to conceive from the sensible qualities of the spices, that nature never intended them to be used in the proportion generally adopted by us at present. It is in Europe that the greatest excesses are committed in this respect : it is well known how much they dispose to gout, indigestion and a long train

train of other ills. We are told that in India the excessive use of candid nutmegs occasions lethargy. It has been very well said, that the best quality of spices is to stimulate the appetite ; and their worst, to destroy by insensible degrees the tone of the intestines.

Sugar seems to have become one of the most necessary articles of our food. It was pretended that sugar generated pituita and thickened the fluids, but Boerhave ascribes to it a very attenuating and even saponaceous quality. He informs us, however, at the same time, that by dissolving too much of our oil, it thins and relaxes us. We are therefore not to be surprized at Fracassini's including sugar amongst the causes of hypochondriacal affection. Linnæus tells us, however, that he has seen people attain a very advanced life who had accustomed themselves to a liberal use of sugar.

The vessels used in the preparation of our food may likewise become noxious to health. The reader will conceive perhaps that we are alluding to copper vessels, because copper is considered as a true poison, which even water is able to attack ; and because we have often been told that aliment prepared in untinned copper vessels had excited the most horrible vomitings, and that copper in a very minute dose is a powerful emetic. There appeared not long ago in the Gazettes an article from Mecklenburgh, in which was said, " within these few days " we had a convincing proof of the bad effects of " copper which have been so often experienced from

" the use of untinned copper vessels in cookery,
 " A farmer came from Grossenluken to Gustrow
 " market with a quantity of four cheese, which he
 " sold. All those who ate of these cheeses were
 " attacked with vomitings, convulsions and other
 " alarming symptoms. Dr. Brun, of Gustrow, to
 " whom some of these cheeses were sent, ascribed
 " all these effects to the copper vessels, in which they
 " had been made. In consequence of this report
 " the magistrates have proscribed the use of copper
 " vessels, in the preparation of cheese or any other
 " aliment from milk." Now I wish to ask, with
 all the respect due to the probity of this cheese mer-
 chant, and to the ingenuity of the Gustrow physician,
 whether all these accidents might not be referred
 wholly to the cheese itself. M. Eller has proved to
 the academy at Berlin, that the use of copper vessels
 is far less dangerous than it is commonly supposed
 to be.

The most experienced chymists, says M. Eller,
 have never been able to discover any noxious qua-
 lity in copper when freed from every heterogeneous
 matter. The corrosive and dangerous properties
 of metallic substances take place only when they
 are in a saline or vitriolic state. Well water, after
 boiling two hours in a copper vessel, afforded no
 marks of copper either to the taste or when exa-
 mined chymically. Nor did beer, milk, salted
 beef, cabbages, carrots, lard, pears or apples, boiled
 in the same vessel, afford any appearance of copper,
 either by evaporation or calcination or extraction.

Vege-

Vegetables which yield a kind of volatile alkali, such as onions, garlic, horse radish, when boiled with meat in copper vessels appeared to be equally free from any metallic taint. M. Eller made similar experiments with elder root boiled in copper vessels, and also with coffee. But neither these, nor pure water that had remained all night in a copper vessel, nor water that had been boiled in it and then suffered to cool, nor broth prepared in it from several pounds of beef, afforded the least particle of copper. Water to which a little common salt, had been added, did indeed dissolve a few grains of the metal, but this was not the case when the salt by being mixed with other substances, was able to act on these instead of the copper.

It is therefore the opinion of this ingenious writer, that food prepared in copper vessels becomes noxious, and will excite vomiting, &c. only when wine or vinegar, or lemon juice, or any other acid are mixed with the aliment; or when meat or vegetables, are suffered to remain too long time in such vessels exposed to a moist air, which will act on the surface of the metal and form a verdigrease. (*h*)

M.

(*b*) Dr. Falconer in a little work lately published by him on the poison of copper, has given many useful observations and experiments on this subject. It is observable that vinegar is extremely liable to acquire a noxious impregnation from brass or copper in the preparation of pickles, in many of which a fine blue or green colour is reckoned a test of superior goodness; this

M. Margraaff has very accurately examined many kinds of tin, and in all of them he discovered a considerable portion of Arsenic, which would lead us to suspect the wholesomeness of tin vessels. It will appear from hence how dangerous it may be to suffer any acid substance to remain long in them. Altho' we are speaking here only of vessels used in cookery, yet I cannot avoid quoting a curious fact related by Baron Van Swieten, who tells us that all the servants of a family were attacked with the colic of lead, from keeping the water they drank, in a large leaden vessel (*i*). Dr. Schinz, a physician at Zurich, is employed in experiments to determine the noxious effects of metallic vessels of every sort, used in cookery.

Hitherto I have contented myself with pointing out how the general qualities of our aliment may be considered as the remote causes of diseases : there remains now to be determined how they may prove noxious by being taken in too large or too small a quantity, or by being improperly mixed.

Too much food is prejudicial to the body, and particularly to the mind. Continued voracity renders us stupid. Temperance constantly adds to the

this quality being often intentionally heightened by nice housewives, by throwing in a few halfpence. Dr. Falconer quotes several modern books of cookery, in which a brass, bell-metal, or copper pan is particularly directed to be used whenever a fine green colour is required.

(*i*) Sir George Baker's observations on the poison of lead, did not appear till after this work was written.

activity

activity and energy of the mind. The ancient Egyptian physicians derived all diseases from the aliment; and their prescriptions in diseases were therefore chiefly confined to vomits, purgatives, and abstinence. The best way to preserve health is to eat even less than we are able to digest.

Cheyne has very well said that we must preserve our stomachs clean if we wish to keep our head clear: a boy who was found in a forest, possessed so acute a sense of smell, from the simplicity of his diet, that he was able to distinguish by it salutary plants from those which had bad qualities. But this delicacy soon wore off when he came to live like other men. A certain blind man is said to have distinguished colours by the touch, but he could do this only when his stomach was empty. Pythagoras ate and drank with great moderation with a view to elevate the faculties of his mind. Carneades previous to his dispute with Chrysippus is said to have purged himself with hellebore, to clear his brain and increase the force of his imagination. It is related of Protogenes that during the seven years he was employed on the picture of Jalyfus, his food consisted wholly of lupines and a little water. He was of opinion that this light and simple nourishment would leave him the freedom and delicacy of imagination.

We are told by Philo, that the Therapeutists were not permitted to eat before the sun went down, and that they did this from an opinion that as the search after wisdom ought to be the employment of the day,
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the care of the body should be deferred till night. We are told that many persons of this sect abstained many days together from every kind of food, and lived, says Philo, in this manner, chaunting their hymns like the grasshopper that feeds on the dew. Amidst all this enthusiasm we discover something reasonable in their notions; for we find them avoiding the excesses of the table, which are the greatest corrupters both of the body and mind. Wine, said they, destroys the reason, and high seasoned dishes serve only to stimulate our concupiscence.

Mr. Law the famous financier in his younger days used to eat only a little bit of chicken once a day, that he might be the more successful at play. Newton was satisfied with a little biscuit and a glass of canary, whilst he was composing his celebrated treatise on colours: this is the reason why Boerhaave tells us he was always surprized at reading or being told that philosophers fancy all their ideas to depend on themselves, when food is known to extinguish as it were, the powers of the mind; and when mathematicians, who before they place themselves at table, would resolve the most difficult problem, rise from a great repast stupid and inactive.

He who finds himself lazy and sleepy soon after a meal may be assured that he has ate and drank too much. Too great a quantity of aliment impedes digestion. It expands and corrupts in the stomach, and if not thrown up by a vomit, as was the custom of the Romans, towards the decline of their empire, will excite head ach, colic, or what is well known
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in England by the name of surfeit, and sometimes even death, as was the case with La Metrie, who died after eating enormously of a patty at lord Tyrconnel's. People who eat much, have usually their face swelled and red, and their eyes prominent, together with a sense of drowsiness after a full meal: hence it happens, says Van Swieten, that intemperate people die suddenly of apoplexy.

Persons of a delicate habit feel anxiety, depression of spirits, and a weight at the stomach, when ever they exceed their usual quantity at a meal; at night they experience all the effects of indigestion, such as flatulency, disturbed sleep, wandering pains, uneasy dreams, incubus, sense of suffocation, and a variety of nervous affections, which even approach nearly to apoplexy, and which are to be relieved only by emptying the stomach, and re-establishing its digestive faculty. Sir Charles Scarborough therefore did well to say to the dutchess of Portsmouth, " You must either eat less, or use more exercise, or take physic, or be sick."

Almost all disorders begin by a bad digestion, and yet we see physicians, even in cases of hypochondriacal, or hysterical affection, deriving the indications of cure from an imaginary state of the air; whereas their attention should be directed to the state of the stomach and intestines; because this must be corrected and re-established if we wish to cure these and a variety of other chronic diseases.

Men of letters, and in general all who lead a sedentary life, think they may eat as much as those

who take much exercise. They may indeed eat with as much appetite; but they will digest their food much more imperfectly than these. So that the greater appetite, literary people enjoy, the more carefully ought they to cultivate temperance in eating; because without this, their flatulency, and the evils that attend it, will every day increase, in spite of all the drugs they may take to remove it, and which will only serve to increase their complaints. This is the source of the melancholy, which is so common to men of letters, and which is exceedingly increased if they live in a damp air, and feed much on food that is difficult of digestion.

It has been the opinion of many practical physicians, that a morbid matter in the *primæ viæ* is a very general cause of fever, and hence the great use of emetics in the beginning of many kinds of fever (*k*). This cause ought to be more particularly attended to in children.

Too great a degree of abstinence will likewise tend to weaken and distress the faculties both of the body and mind. Men who in the earlier ages from a mistaken notion of religion, confined their diet to a few figs or a crust of bread and a little water, were

(*k*) A late writer, Dr. Lyffons, has supported this doctrine in an essay on the effects of camphor and calomel. But the morbid state of the *primæ viæ* is perhaps more commonly an effect than a cause of fever, and where it primarily exists, does perhaps in the greater number of cases only concur with other remote causes to excite the disease.

so many gloomy and visionary enthusiasts : and I have no doubt, but that the excessive abstinence to which the Carthusians and some other religious orders are subjected, is one of the great sources of modern superstition.

The absurd mixture of aliments, which is so universally prevalent in these times, is extremely repugnant to nature, and of course, noxious. Our modern cooks, who have the talent of combining together things the most opposite in nature, deal out at the same time poison with their dishes, and thus shorten the period of human life. The nervous symptoms which are now so frequent, especially amongst people of fashion, are to be referred in a great measure to the luxury of their tables. It is by no means wonderful, that such a mode of life should change the order of nature, and produce new and fatal symptoms, or rather diseases, that were wholly unknown to the ancients. As in Germany, so at every feast formerly in France, it was the custom to reckon how many of the company were drunk ; and this was done, to prove, that the master had been liberal of his wine. It will perhaps soon become the fashion to reckon how many have been suffocated on these occasions, as a proof of their having ate plentifully. I know no civility so ill placed as the forcing our friends to cram themselves with a variety of dishes. What can be more absurd, and at the same time more prejudicial to health, than to see people loading their stomachs with such a contradictory variety of acids, spices, meats, cream, ice, pastry, and wine ; together with fruit of every sort,

coffee and cordials, and an almost endless catalogue of other luxuries which are served up at every entertainment. What sort of chyle or what degree of wholesome nourishment can be expected from so unnatural a mixture. Every day's observation serves to prove that the great and opulent who live in this manner, seldom attain to old age : or if they do, it is to linger in advanced life, with sickness and infirmities which they very often entail on their posterity.



CHAP. VII.

Of Drink, considered as remote causes of diseases.

WATER would seem to be the drink intended by nature for man. Fermented liquors are due rather to the industry of mankind than to nature. There are certain determinate qualities which constitute good water. It should be light, soft, transparent, and perfectly insipid (l).

The Greeks and Romans considered water as an universal medicine. Boerhaave tells us, that water cleanses and strengthens the *primæ viæ*, and that it keeps off acute diseases, and is the best remedy for thin persons, or those who have too much bile or any peculiar acrimony. Water does not extinguish

(l) Celsus expresses himself with great elegance on the properties of different waters. "*Aqua levissima pluvialis est; deinde fontana, tum ex flumine, tum ex puteo; post hæc ex nive aut glacie; gravior bis ex lacu, gravissima ex palude. Facilis etiam et necessaria cognitio est naturam ejus requirentibus. Nam levis pondere apparet, et ex his quæ pondere pare sunt, et melior quoque est, quo celerius et ca. est et frigescit, quoque celerius ex ea legumina percoquantur.* Lib. ii. cap. 18.

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the fire of genius. Demosthenes is said to have drank only water. It would seem too as if Cæsar had confined himself to this liquor; Cato speaking of him as the only one who had been able to overturn the republic by his sobriety. Tiraqueau drank only water, and yet he was the father of forty children, and published as many works.

There are many sorts of waters, some of which are extremely hurtful to health. Rain water would seem preferable by reason of its levity, but it is easily disposed to putrefaction, because it washes down many floating volatile particles, and the ovula of different animalculæ with which the air abounds. Rain water becomes much more unwholesome when it has stagnated any length of time in cisterns. In Holland and other countries where there is a deficiency of every other kind of water, they in some measure remedy the inconvenience of this by boiling it; but by drinking it warm and in abundance, it occasions many ill effects (*m*).

The water of rivers is not always healthy, because they carry with them a great deal of filth, and other impurities; this is particularly observed of the Seine, the Ganges, the Nile, &c. Spring water constantly partakes of the nature of the soil from which it flows, and

(*m*) Rain water will be more wholesome when collected at a distance from large towns, the atmosphere of which is commonly very impure. M. Margraaff, of the Berlin academy, made many ingenious experiments on rain water, which he found to

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and in general is hard and heavy. This will commonly be the case when it flows through marle or clay, or strata of minerals. The lightest and the purest spring water is found to flow through a light sandy ground. Well water has the same properties as spring water, and is found sometimes to occasion calculous concretions, as is the case with those waters which flow from rocks. These will be likely to produce bad effects if drank without being boiled and suffered to repose till they have deposited a sediment (*n*). There can be no doubt but that if hard water meets with a viscid mucus in the urinary passages, it may lay the foundation of calculus. This seems to be the reason why the stone is so frequent in certain provinces. There are some happy constitutions however on which these bad qualities of water make no impression.

The most insalubrious of all waters is that of marshes and stagnant pools. All good observers, from Hippocrates downwards, have pointed out the unwholesome nature of stagnant water. The

contain a great variety of adventitious matter. He likewise observed a great tendency to putrefaction from the green weed which rises on its surface, and a mucilaginous substance which grows copiously on it. Boerhaave who long before this had observed this mucilaginous substance, compares it, when viewed through a microscope, to a grove of mushrooms. Hippocrates recommends rain water in preference to all others, but cautions us at the same time to boil or strain it, otherwise, says he, it will have an ill smell and excite hoarseness.

(*n*) I have myself experienced the good effects of this method at Paris, where the water that is in common use seldom fails to affect new comers if not boiled before it is drank.

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Danish missionaries tell us, that the elephantiasis, which is so frequent in the island of St. Thomas, is chiefly occasioned by the badness of the water used for common drink (o).

Snow water is considered as the cause of the bronchocele, a disorder which is very frequent in the neighbourhood of the Alps. These swellings are very rare in Tyrol, whereas in the villages of Piedmont they are so common and natural as to be considered as an ornament. In Switzerland we meet with bronchocele in the low lands. It is well known that the purest water is procured on the mountains (p).

Wine

(o) The leprosy is found to be a very common complaint in almost all the new discovered islands in the South Sea. "This disorder," says Mr. George Forster, "is more frequent in the islands which were visited by Tasman, than at Tahitee, from there being only putrid stagnant water in a few dirty pools". Alpini, informs us, that the elephantiasis is endemical in Egypt. Galen ascribed it to the impure waters of the Nile, and Lucretius in the following lines seems to have adopted the same opinion.

*Est Elephas Morbus, qui propter flumina Nili,
Gignitur Aegypto in Medio.*

(p) The cause of bronchocele has been ascribed by almost all authors to the use of snow water, tho' seemingly without reason. My ingenious friend Dr. Coste of Calais, who was born in the neighbourhood of the Alps, tells us in one of his publications, that bronchocele is not more common there, than it is in many other provinces of France, and that Geneva is the only situation near those mountains where Juvenal's imputation is justified; and he is of opinion that the cause of these swellings is not to be looked for in the use of snow water, because the water from
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Wine, when immoderately used, is to young people what manure is to vegetation, which hastens the progress of the fruit, but destroys the plant. Wine used in early life is a poison. It undermines all the principles of man, exhausts his powers, destroys the faculties of his mind, and excites vomitings, fevers, phrenzy, madness, convulsions, apoplexy,

the water from the Alps is filtered through beds of earth and gravel before it reaches the lake of Geneva; and he therefore ascribes it to the Genevese manner of living. The trials of captain Cook in his voyage round the world, prove the wholesomeness of frozen water beyond a doubt. This gentleman in the high southern latitudes found a salutary supply of fresh water in the ice of the sea. "This melted ice," says Sir John Pringle, in his ingenious discourse on the means of preserving the health of mariners, "was not only sweet but soft, and so wholesome as to shew the fallacy of human reasoning unsupported by experiments. An ancient of great authority had assigned, from theory, bad qualities to melted snow, and from that period to these times, this prejudice had not been quite removed." It is observable that bronchocèle occurs in many countries of Europe where hard calcareous waters are much drank. This disorder is not uncommon at Rheims, where the well water runs through a kind of chalky quarry, with which it is strongly impregnated. Hoffmann gives us many instances in the same way. Dr. Lucas tells us, he has seen it brought on by the abuse of sea water, and that he has frequently observed it at Spa, not only in the inhabitants but in many strangers of different countries who drank excessively of the Pouhon water. I have carefully attended to this observation of Dr. Lucas, during the two seasons I have been at the Spa, but I never saw any marks of this swelling in any of the company who came there to drink the waters. There are indeed some few instances of it amongst the inhabitants, but not in a greater proportion than at Vervier, Liege, and other places in the principality. There are instances of bronchocèle in some parts of Kent, where the water is hard and calcareous.

and sometimes even death. It is the general effect of wine to enervate the flow system by degrees, if men habituate themselves to it in too great a quantity and very often to terminate in dropsy, more commonly however it predisposes to inflammatory diseases, to gout, asthma, dropsy, and apoplexy.

Sedentary persons of a plethoric habit, by drinking too much wine bring on violent pains of the back and loins, and are disposed to generate calculus. Men have been seen to die from an inflammation of the stomach, by inconsiderately drinking too largely of wine after violent passion. Bacon tells us he had seen the antient opinions, relative to the effects of wine on generation, confirmed by experience. He is of opinion that great drinkers lose their virility.

Those wines are considered as the best for common use which yield the least spirit and tartar, but which contain the most oil and earth, such are the Neufchatel wines with us, and those of Burgundy. In general however, the lighter wines are more healthy than the heavy bodied wines. Brisk and spirituous wines have the reputation of affecting the head; and this is said of Champaign, tho' without reason, when it is drank with moderation. Mellow Burgundy makes a greater impression on the nervous system. Champaign has been even recommended to gouty people, from its having been remarked that gout is very rare in that province: Burgundy on the other hand is found to irritate in this disease. The Rhenish wines pass easily by urine, and have a light acidulous taste, which is unpleasing to many palates.

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But when these wines have been kept fifty or sixty years, and such I have sometimes tasted, it is truly delicious, but ought not to be drank too freely. These wines are in general preferable to most other sorts of wine.

Some physicians prefer white wines to red, others are of a contrary opinion. It cannot be denied, however, but that the colouring part of red wines diminishes their levity. This colouring part is particularly distinguishable in the urine of hard drinkers, especially when they are sick. The generality of red wines are likewise supposed to be in some degree astringent.

Of the strong wines, the Hungarian is indisputably the best and most healthy. It surpasses almost all the other European wines, even those of Italy, France and Spain. This wine is cultivated in the county of Zemple in Upper Hungary, in the neighbourhood of Mad, Tolezua, Benye, Talga, Schadan, Keresstur, Tarzal, Sermesch, and Tokay. All these wines are nearly of the same qualities, and are called Tokay wine. It has been remarked that the best Hungarian wine after its fermentation, yields half its quantity of spirit of an exquisite flavour, and the remainder has a sweetish and slightly acid taste. Even wines of the most inferior sort in Lower Hungary have no acidity, and deposit less tartar than Rhenish.

Wines in general, when drank with moderation by people in health, tend to counteract the putrescency of animal food. Dr. Rogers observed that

the putrid fevers at Cork were the most prevalent amongst those who drank only water with their meat.

Sweet wines, or those which have not passed beyond a certain degree of fermentation, are commonly diuretic. This is the usual effect of all new wines. They sometimes excite strangury and a painful heat in the urethra; I have seen similar effects from beer in certain circumstances. These inconveniences, however, do not occur where the sweetness depends on the native richness of the grape, and where the juice has been suffered to evaporate to a certain degree previous to fermentation. By this precaution these wines continue sweet a long time, and are not easily susceptible of spontaneous fermentation. This is the case with the sweet wines of France, Italy, Spain and Persia.

Amongst the acidulous wines we may include the Rhenish and Moselle. These wines when distilled, yield a third part of alcohol, and the residuum has truly the taste of vinegar. Rhenish wine, that has not been long kept, contains much tartar. Some physicians undertook to explain from this why the stone is so frequent with some of our religious orders in Germany whose drink is chiefly Rhenish. But Schmidt has very clearly proved tartar to have no noxious qualities, and that no tartar is to be found in old Rhenish; he therefore concludes the acid of this wine to be perfectly innocent; and is of opinion that Rhenish will rather tend to prevent than to generate calculus. It is observable that this disorder is very rare in the neighbourhood of the Rhine. The
Moselle

Moselle wine has the reputation of containing less tartar than Rhenish, but will keep good to any age, and is found to dispose to gout.

The acid and austere wines which are made in Switzerland, on the borders of the Reus, the Aar, and the Limat, are said to occasion diseases of the joints. But on the other hand the stone and gravel are so rare in these countries, that I doubt whether acid wines can have any share in producing these complaints. These diseases as well as the gout, are rather occasioned by the too liberal use of the rich wines of France and Italy.

Small, thin wines, are easily disposed to ferment; these wines frequently become sour, and are then no longer an wholesome liquor. The avarice of the dealers in wines has invented a remedy for this inconvenience which is truly poisonous. M. Macquer observes that alkalis and absorbent earths might perhaps restore these wines for some little time, but as these substances give a dark colour or greenish tinge to the wine, together with a taste which is not less disagreeable than that they have been employed to remove, these retailers of poison mix the calx of lead with their wines, and this gives them a sweetish taste, and at the same time checks fermentation without producing any change of colour. This experienced chymist points out the means of discovering this fraud, by mixing hepar sulphuris with the wine we suspect to be adulterated in this way. If the mixture precipitates a brown coloured or blackish sediment, we may be assured that lead has been added to the wine, otherwise
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the precipitate will be of a white colour, or simply coloured by the wine.

The celebrated Gaubius has published another means of discovering the presence of this poison in wine. He directs a solution of orpiment in lime water to be poured into the wine, and if the mixture assumes a reddish or a blackish tinge, we may be assured of the presence of litharge.

Of all wines, Rhenish seems to be the least susceptible of adulteration, because dried raisins, litharge, &c. deprive it of its acidulous taste, and will at once discover it to be spurious. The Dutch had a custom formerly of adulterating the French wines by the most horrid artifices. They impregnated their casks with the vapour of arsenic, sulphur, and pitch, and by these means the wine preserved its freshness and good taste many years; but in India it occasioned the most fatal dysenteries. Altho' the wines which are adulterated in great quantity at Hamburgh, and from thence distributed thro' all the northern parts of Germany, are of an agreeable taste, yet they are not less unhealthy, on account of the brandy which is added to them. These wines soon affect the head, and render the body extremely heavy and indolent. In France they now prefer champaign that does not flower in the cup, to the brisk and sparkling wine; because it is well known that the briskness of champaign is in general occasioned by the turnip juice, or birch juice that is added to these wines. This sophistication is a very harmless one, because in many cases turnip juice is an excellent remedy.

Rice

Rice and vegetable substances in general afford a vinous liquor by means of fermentation. Dates, which are the fruit of the palm-tree, likewise yield an agreeable wine, but it soon becomes sour. The Swedes make a very palatable wine from raspberries. They make a wine of the same sort in England, where they prepare wine from elder berries, and many other kinds of fruit. The English are very fond of these wines, when they have been fermented with sugar, and mixed with brandy. The English, as well as the French, likewise prepare a great deal of cyder and perry from apples and pears. These liquors have the reputation of being more substantial than the common weak wines. Perry is a soft liquor, but its effects are no less fatal than those of cyder, if the fruit from which it is prepared, has not been sufficiently ripened (*q*). These effects are a violent constipation and all the symptoms of the colic of lead.

Beer is an article of beverage almost in every country. The Chinese prepare it from rice, and the Americans from maiz. The mucilage, which enters into the composition of beer, renders it in a certain degree nutritious. The hops, with which it is impregnated, have been supposed to prevent the formation of calculus, but this seems to be a mere supposition. The best kind of beer is Brunswick mum; which is hardly inferior to the

(*q*) This was the commonly received opinion, till Sir George Baker very satisfactorily traced the cause of this colic to the poison of lead. See *Med. Transf.* vol. i. and ii.

Spanish wines, and even keeps good under the Line. But I consider this beer as well as all the rich, soft wines, as so many medicines, which are very useful when properly used, but when taken too liberally or improperly, become so many poisons. Beer that is imperfectly fermented is extremely noxious, when taken in considerable quantity. The Dutch, prefer beer of this kind to every other, and are extremely pleased to see their glasses filled with froth. This beer sometimes excites dysury. Boerhaave has seen it occasion convulsive colic, inflammation of the stomach and intestines, and death. In the memoirs of the French academy, we read the case of a gentleman who died after drinking a considerable quantity of strong beer that had been imperfectly fermented. His body was opened after his death, and the intestines were found enormously distended with flatus.

The use of distilled liquors has occasioned, and continues to occasion, an innumerable train of ills to the human species. Of this class is brandy, which Sydenham wished to see confined to external uses. The properties of this liquor are the same whether it be drawn from wine, or corn, or cherries, or sugar, (*rum*), or from rice, (*arrack*). Nor are those oily and delicious cordials less fatal, which are principally prepared from brandy, and served up so liberally at our tables where death seems to insinuate himself under the soothing garb of luxury.

Brandy distilled from corn is inferior in strength to the brandy distilled in France at Cognac or Orleans. The first of these brandies contains nine parts

parts of water to five of alcohol ; whereas the French brandy contains nine parts of water, to seven of alcohol. The French brandy has likewise an agreeable flavour, which, together with its strength, it preserves to the last drop ; whereas malt spirit has an acidulous and somewhat pungent taste. The Rochelle brandy has likewise something of this pungency ; but malt spirit is more inflammable, and notwithstanding the peculiar flatness of its taste, is more heating to the body than any other.

Kirsch-wasser, which is a spirit drawn from cherries, is prepared in every part of Switzerland ; and when of a certain age, is no way inferior to the best French brandy. I have seen it make excellent punch when mixed with sugar and lemon juice.

Rum is a more oily liquor than brandy. Arrack is much stronger than rum, and contains a very attenuated oil. A rational and moderate use of these liquors would, perhaps, be rather salutary than noxious ; but there are few men who know how to do this. The world abounds with prejudices on the subject of spirituous liquors. I have heard it asserted in Switzerland, that *kirsch-wasser* is a cooling liquor. I have sometimes answered these people by saying that the vulgar have ascribed the same properties to pepper, and that a sophist once undertook to prove that fire was cold, and ice, hot.

Pecquet was of opinion that exercise was in no way useful to digestion ; which was to be promoted rather by some spirituous liquor : he therefore recommended a little dram as the best thing after a meal, and he gave the example by taking it him-

self. At first this method seemed to agree with him, but after sometime he felt many inconveniences from it, and these gradually increased to such violence, that Pecquet was obliged to quit his employment, and became a melancholy victim to his own folly.

Spirituos liquors so far from facilitating digestion, gradually destroy the tone and of course the functions of the stomach. At first they seem to strengthen it, and to do good, but these are transient effects and a prelude to general weakness. It can never be said that drunkenness is the antidote to gluttony.

Spirituos liquors have been used as a remedy against flatulency; they do indeed afford a temporary relief, but the complaint soon returns again, and with increased violence. As this flatulency is occasioned by a debility of the organs of digestion, the disorder is increased by the use of these absurd remedies. I knew an hypochondriacal patient, who had accustomed himself to drink a little glass of French brandy every evening, in order to obviate his flatulency. But his complaints increased daily he had frequent vertigo, and augmenting the dose of his brandy, at length died apoplectic in the flower of his age.

I knew another who was likewise hypochondriacal, and whose wife was sometimes exceedingly fantastical and troublesome. The good man by taking a little dram on these occasions, used to fancy himself superior to his wife's follies, but as these whims frequently recurred, his disorder sensibly increased

ceased in proportion as he drank ; he complained of extreme anxiety, and violent diarrhoea, and at length fell into the most frightful despair, every time his amiable partner thought proper to carry her singularities to any length.

The effect of brandy is to harden and contract and thicken all the parts of the body. Very hard drinkers are in the plight of dropfical patients, *quo plus sunt potæ plus sitiuntur aquæ*, the more they aim at extinguishing the thirst that devours them, the more the brandy seems to inflame their intestines, till at length their stomach loses all its sensibility. These people commonly die of inflammatory disorders of the breast, or of asthma, or hydrothorax, or polypus. Sometimes they are carried off by apoplexy (r).

(r) Even the hardest parts of the body, as the bones, are rendered exceedingly inflammable by the excessive use of spirituous liquors. In 1772 a poor woman was accidentally burnt to death at Coventry, who for many months before, had swallowed from half a pint to a quart of rum or aniseed water every day. This brought on jaundice and other complaints ; but she still continued her old practice of dram drinking, and smoked a pipe every night. At length she fell out of bed, and was found the next morning burnt to death ; though the fire in the grate had been small, and the furniture in the room had suffered but little. Except one thigh and leg, there were not the least remains of any skin, muscles, or viscera ; and the greater part of the bones were compleatly calcined and covered with a whitish efflorescence. Mr. Wilmer, who communicated a very circumstantial account of this case to the Royal Society, concludes it with observing, " That her solids and fluids were rendered inflammable, by the immense quantity of spirituous liquors she had drank ; and that when she was set fire to, she was probably soon reduced to ashes." *Phil. Transf.* vol. 64.

Thierry has observed in subjects who died of excessive drinking, the bronchi oftentimes contracted to a third of their usual diameter. I know by experience, that this contraction is sometimes to be perceived in drunken men. Baron Van Swieten, observed in a woman, who had been much addicted to brandy, the spleen, pancreas, liver, and in general all the viscera, exceedingly hardened, and as it were petrified.

I cannot agree with Thierry, who is of opinion that spirituous liquors may be drank with the same impunity in hot as in cold climates. He thinks that these liquors, the use of which, makes so great an impression on a European in a temperate climate, would hardly seem to affect the same person, if taken in the same quantity between the Tropics, or near the Polar Circles, or at a certain height of the Atmosphere. This opinion seems to be founded on two observations. 1. Smith asserts that the same quantity of wine which excites drunkenness in Europe, is hardly sufficient to support the vital spirits in Guinea, on account of the continual and excessive perspiration which prevails in that country. 2. It has been observed that spirituous liquors in very cold countries are not more heating than water.

It is indeed indisputable that in hot countries the perspiration is very great, and that the strength being soon exhausted, a stimulus and renewal proportionate to the waste will be necessary. The merchants who traverse the deserts of Asia, to go from Turkey into Persia, quench their thirst with brandy,
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or with the strongest Persian or Spanish wine. Wine is indispensable to all the Europeans who visit Carthage: And, indeed, all the inhabitants complain of pains in the stomach, when the arrival of the galleons is retarded beyond the usual time. The Spaniards on such occasions are obliged to mix pimento with their aliment in order to excite their appetite.

These observations prove to us, that wine and spirits are really required in hot climates to moderate thirst; and in times of excessive heat, to counteract the excessive waste by perspiration. I have often been informed by some of our sportsmen in Switzerland, that nothing relieves their thirst in summer so much as *kirsch wasser*, but they have told me at the same time that it should be used with moderation. I have likewise seen delicate people obliged to drink wine, from time to time, during very hot weather, which, without this, would have been insupportable to them; but none of these observations prove the innocence of spirituous liquors in a hot season, especially when taken to excess, which in every situation and circumstance will inevitably do harm.

These liquors would seem to be more harmless in very cold Northern climates. We indeed find that brandy is universally used in the north of Europe. This reproach is perhaps less applicable to Germany, though I perceive that brandy begins to be relished in Lower Saxony, and even to have the reputation of an universal panacea. I have heard some of the physicians of that country re-
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proach their female patients with not taking their medicines, and the ladies have pleasantly replied, *Well, but we drink brandy!* Baron Haller, is of opinion, that the concretions in the gall bladder, which are so frequent amongst the lower order of people at Gottingen, are to be ascribed to the immoderate use of brandy. There is a great quantity of brandy consumed in Poland. People of the best fashion in Denmark drink cordials every morning; and at table, a little glass of brandy is poured on every dish that is difficult of digestion. In Sweden, brandy or some other cordial is presented to the company previous to their sitting down to table, and this is done to excite appetite. Drunkenness is every day gaining ground in Siberia. The Laplanders begin to drink brandy in their very infancy, and so much are these people addicted to an immoderate use of spirits, that government has thought it necessary to interfere in this matter. The same excess prevails throughout Iceland. The Greenlanders are the only people in the North who are moderate in this respect, and they owe this moderation, perhaps, to their greater fondness for train oil. But this practice of drinking spirituous liquors, which is so generally prevalent in those cold countries, does in no degree prove them to be innocent. A Laplander takes *nux vomica* in the colic: we are sufficiently acquainted with its poisonous effects. A Russian will even swallow *aqua fortis* on certain occasions.

But there are many facts which prove in the clearest and most satisfactory manner the bad effects of spirituous liquors. Bernier tells us that the English

fish destroy themselves at Bengal with their punch. If the missionaries at Tranquebar are to be credited, the Europeans suffer exceedingly from the immoderate use of arrack at Malabar: the inhabitants themselves consider it with horror. Bontius tells us that the greater number of Dutch sailors, who die in the Indies, are destroyed by arrack. Cheyne tells us that the immoderate use of punch in America occasions very frequent colics, convulsions, palsies, and death. I have been well assured that rum punch carries off a thousand persons every year in Jamaica. This liquor is so strong as to be insupportable to new comers; and the least irregularity brings on the most violent fevers which prove fatal in a few hours. De Ulloa tells us that the number of women in Peru is considerably greater than that of men, because the men accustom themselves to the use of spirituous liquors from their youth, and therefore seldom attain to advanced life.

The laws and the religion of all the nations that are exposed to great heat of climate, prove that drunkenness has been considered by them as a dangerous vice under a burning sky. The Carthaginians had a law which forbid the use of wine. Mahomet proscribed wine, and all his followers abstained from it. The inhabitants of the East Indies are universally temperate and sober, and abstain from wine. Baron Montesquieu has very well observed that drunkenness excites phrenzy in hot countries, and in cold climates renders men stupid.

There remains for me to speak of tea, coffee and chocolate, considered as the remote causes of
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disease. Incapable of flattering the passions and prejudices of men, I shall frankly say what I think of these fashionable liquors, without troubling myself about what the ignorant and vulgar may oppose to me on this subject. Lord Bacon was surprised that tepid liquors had been so much neglected by the moderns ; but that venerable and penetrating philosopher, were he now living, would with sorrow be convinced that this negligence is no longer prevalent, but that warm liquors are now taken to excess.

Tea is known to be the leaves of a shrub cultivated in China and Japan, the only countries in which it is indigenous. The Chinese distinguish many kinds of tea from the diversity of the colour, odour, taste and figure of the leaves. Some of these distinctions are altogether arbitrary. The Chinese dealers sometimes distribute the leaves of other plants for the genuine tea. The varieties of the latter are by no means numerous ; all these species are now known to be the produce of the same shrub, gathered at different seasons and prepared somewhat differently.

The two principal kinds of tea are the green and the bohea. Green tea is presented in China to visitors, the bohea is in more general use throughout the empire. Cunningham distinguishes the tea that is brought to England, into fine green tea, common green tea, and bohea tea. The best bohea is affirmed to be the buds of the tea plant gathered in March and dried in the sun. The green teas are culled in May and June and dried over a furnace. The greater
part

part of the tea that is brought into Europe comes from Canton. The dearest, and at the same time the best tea I have ever tasted, is that which is brought by the Russian caravans which go every two or three years to Pekin. This together with all the other commerce of the caravans belongs to the empress, and this tea passes into other hands only in the way of presents (f).

Tea is adulterated by a variety of additional substances, but especially the bohea tea, which is often mixed with an infusion of Japan earth, and afterwards dried.

People of the lower class, in China, boil the cheaper and inferior sort of tea in large quantities in a kettle for common drink. Persons of a higher rank, drink the finer kind of tea, prepared in the same manner as in Europe, but use no sugar with it. The Tartars, are the only people in China who mix milk with it. The Japanese first powder the tea and then mixing it with water, stir it as we do chocolate till it froths, and then drink it without sugar.

The Asiatics in general, but above all the Chinese, extol the medicinal virtues of tea. I have seen some

(f) The tea which is brought in this manner to St. Peterburgh is exquisitely well flavoured, and the flowers are sometimes seen upon the stalk when it arrives. Its keeping so fresh is ascribed to its coming by land, tea being a very delicate plant which is always a little corrupted by the smell of a ship's hold.

Chinese prescriptions for nervous weakness, head ach, tenesmus, hemorrhoids, cardialgia, and a variety of other diseases, and of all of them tea was the principal ingredient. But it is well known how extremely partial the Chinese are to every thing that originates in their own country ; and enthusiasts always see things in a false light.

There are many writers however, and those worthy of credit, who agree that the excessive use of tea occasions a variety of nervous disorders in China, and likewise diabetes, consumption, and death. The Ling Fi directs tea to be taken in small quantities, and never fasting. The author of the book Tchang-Seng, or the art of preserving health, says, " I confess that tea is not agreeable to me, and that my stomach revolts at it every time I am obliged to drink it ; perhaps the weakness of my constitution when young may be the cause of this antipathy". This avowal proves how erroneously those Europeans have argued, who have attempted to say why tea is so salutary to Asiatics and so prejudicial to the inhabitants of our continent. Marvellous accounts have likewise been related of the good effects of tea in Europe. I every day hear it extolled as doing wonders, by persons who suffer extremely from its use. Two Dutch physicians, Craanen and Bontikoe, who in the last century wrote in favor of tea and perhaps of the Dutch East-India company, asserted that the blood was in the highest state of perfection, when in the most perfect fluidity, and that with such blood there could be no disposition to disease. Dr. Bontikoe maintained

tained that tea ought to be drank to the quantity of one or even two hundred cups a day, as a preservative from every disease, and pretended that this might be done without the least injury to the stomach.

This notion was soon generally adopted, and tea was drank without moderation, with a view to thin the blood, or rather to increase the dividends of the company. Boerhaave very happily opposed the progress of this opinion (*t*) and put a stop to the ravages it occasioned.

We are told that tea acts as a diuretic, increases the insensible perspiration, cures head ach, drowsiness, and palpitation of the heart, renders the body active and elevates the spirits. Others are of opinion that it strengthens the stomach and intestines, and is good against indigestion and diarrhoea. There are some persons who consider strong green tea as an emetic, and yet extol its use in hypochondriacal and hysterical affection.

It cannot be denied, says Baron Haller, but that tea occasions for some time a certain gaiety and liveliness. This is the reason why I recommend a moderate use of tea to healthy people. I likewise recommend it to people who are obliged to expose

(*t*) Dr. Duncan, a physician at Rotterdam, was the first who ventured to decry the abuse of tea and coffee, in a little work entitled, "*Advice concerning hot Liquors.*"

themselves to cold, especially travellers: and I find it very useful when drank after exposure to cold, damp air, as it soon removes the weight and lassitude which are the effects of a common cold. In what then, may we ask, consists the real advantage of tea in these cases? Boerhaave tells us it is in the warm water.

But a physician must be a Sangrado to suppose that warm water will be of use to every stomach. Hippocrates long ago told us that too great a use of warm water softens the flesh, weakens the nerves, renders men stupid, and occasions hemorrhages, syncope, and death. Tea will therefore be in many respects hurtful from the manner in which we take it; whether we attribute the virtues of this beverage to the tea itself or to the fermentation of the sugar, which I do not believe by the bye, or to the warm water. I will not insist here on the assertion of the celebrated Linnæus, that all the plants which resemble the tea shrub are venomous; because I know many ladies in Switzerland, who drink only warm water with sugar and cream, and who feel the same effects from this beverage that others do from tea. Linnæus is of opinion that we have to fear only from the use of new tea. This rule however is applicable only in China and Japan, where recent tea occasions a degree of intoxication. This is the reason why the laws of these people have determined how long the tea is to be kept before it is drank.

There is something exceedingly penetrating in the nature of tea, and perhaps at the same time attenuating.

nuating. It is well known that after frequent blood letting nothing gives a cadaverous complexion so soon as tea. We had a gentleman in Switzerland, who in every respect knew how to assume the tone of majesty. He was told one day that nothing elevated the dignity of a king so much as when every thing around him had a pale look. This intimation was sufficient for him. He directed all his servants to be blooded once a month, and obliged each of them to swallow fifty dishes of tea every day.

The ill effects of tea, in cases of hysterical and hypochondriacal affection, are indisputable. When I studied at Gottingen, I used to drink tea in the night with a view to prevent drowsiness, and it had this effect so completely, that at the end of the two years I pursued this method both my sleep and my strength had forsaken me, and my head was as weak as my stomach. I have seen many persons of my acquaintance affected in the same manner, and from the same cause. I have since that time had occasion to observe in Switzerland, that in many of my patients tea had the effect of rendering the pulse slow and weak; and that an improper use of it, very often excites flatulency and hypochondriacal affection, tremor, palpitation of the heart, vertigo, vapors, fluor albus, and sometimes deep melancholy. Dr. Friend knew a woman who had an incontinence of urine, and afterwards a suppression of the menses, brought on by tea.

Many hypochondriacal people imagine they have a coldness at the stomach, and they attempt to remedy

medy this by different methods. Some of them are careful to wear something warm upon their stomachs, others eat every thing hot. Soup they say is hurtful unless they eat it very hot. They drink their tea in the same manner. I know one of these people at Zurich, who is almost constantly with his tea pot in his hand, and he does this with a view to warm his stomach. This patient is exceedingly flatulent and subject to cholic. I do not pretend to say to these people, as some of their physicians do, that they have really cold stomachs, but I call this pretended coldness an extreme degree of relaxation, and I attribute it in a great measure to tea.

Our Swiss ladies would no sooner give up their tea at stated hours, than they would their card tables. This is the reason why the fluor albus is as common in this country as it is in Flanders and Holland. I sometimes succeed, tho' slowly, in the cure of this disease, by employing every thing that is contrary to the effects of warm water, such as bark, chalybeates and tonics in general. I have often seen this disorder in girls of ten years old. Cheyne tells us that in these times it attacks the most amiable persons of the fair sex, and is a very common cause of sterility. All the women, who are incommoded in this manner, do not indeed drink immoderately of tea, but I believe we may venture to ascribe it to this in the greater number of cases; it seeming to be indisputable, that the present general use of tea cooperates with other remote causes in the production of many diseases.

Nearly the same things may be said of coffee, which is the berry of a plant indigenous in Arabia
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and Ethiopia. We find no mention of it in the ancient Greek writers, nor in the Arabians. Rauwolf was the first who made it known in Europe in 1528. It was long derived wholly from the Levant, till the Dutch began to cultivate it at Surinam, and the example of these has been since followed by the English and French in their West Indian settlements. The American coffee is now extremely common in every part of Europe. The Levant coffee has still, however, the reputation of being the best. There are two kinds of it, one of which comes from Mocha, and the other from Grand Cairo: both these have the same qualities. The Dutch bring their coffee from Java, and the French from the island of Bourbon, and they sell this at a dear price for Levant coffee, tho' it is by no means, so good. The American coffee is inferior to all the other sorts, especially when it has been soaked in sea water by way of adding to its weight. This method, which is very often practised, gives it considerable acrimony.

The Turks are as fond of coffee as the Chinese are of tea. They have a method of preparing it, so as to render it much better than it is with us. The great secret is said to be in their manner of roasting it, so that no part of it escapes. They drink it copiously without milk or sugar. Some writers have attempted to prove why the use of coffee produced few or no ill effects amongst the Turks: but they ought surely to have proved first of all, that it really never did produce any ill effects with these people. There can be no doubt but that the Turks suffer from the abuse of coffee as much as we do. It renders

ders them weak and stupid, especially when they join to it the use of opium.

The advocates for coffee have attributed many good properties to it ; they tell us that it assists digestion, removes head achi, promotes all the secretions and acts as an exhilarant. There may be some truth in all this, in people who take it seldom, who drink little or no wine, and whose nerves are not easily affected. A young lady in Switzerland, who in the opinion of Rousseau joins the pen of Voltaire to the genius of Leibnitz, wrote to me one day, " without coffee I am as stupid as an oyster". There can be no doubt, however, but that the abuse of coffee does considerable harm, even to persons of the best health ; and that in relaxed and nervous habits, and in many diseases, the most moderate use of it will do harm. I myself drink coffee twice a day, but I take only two cups of it at a time, and in this way I feel no inconvenience from it. If I exceed this quantity and drink four cups, I find myself affected with tremor, uneasiness and flatulency. I have observed that others in good health, but who are of a weakly habit, are affected in a similar manner whenever they drink more coffee than usual.

A long continued abuse of coffee, by persons of a lively and irritable temperament, excites all kinds of nervous complaints, especially in women. It very often occasions eruptions in the face, and has seemed to me to be one of the principal reasons why the Swiss women have their catamenia so long beyond the period of Life at which this evacuation usually ceases, and hence fall into dangerous diseases. I am mistaken if I have not seen the excessive use of
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coffee dispose to hemorrhages from the nostrils, lungs, uterus, and hemorrhoidal vessels ; and lay the foundation of cough and phthisis pulmonalis. It was observable that the consumption in these cases was accompanied with extreme gaiety. Thierry tells us that coffee prepared with milk sometimes suddenly brings on the fluor albus. But of this I can say nothing from my own experience. Raulin observes that coffee sometimes acts as a purgative, and occasions diarrhoea. I myself have seen coffee, with and without milk, contribute to the bringing on hysterical diarrhoea, a disorder which is very difficult of cure. Thierry has seen people subject to the most violent head ach, which no remedies were able to relieve till they renounced the use of coffee. He has likewise seen, as well as myself, people deprived of sleep, and losing flesh daily from the too great use of coffee. But on the other hand I have seen it succeed in procuring sleep in a case in which opium had been tried without effect. A lady of condition, 66 years of age, had been long troubled with a painful gouty complaint, which deprived her of sleep. Recourse was at length had to opium. She took one grain of it the first night, but had no sleep. The second night the dose was doubled, but was equally ineffectual ; about the middle of the night the patient took it into her head to ask for coffee, from a recollection that it had formerly been useful to her when watchful and restless, and that similar good effects had been experienced from it by some others of her family. I willingly consented to the trial, tho' without expecting any good effects from it, and the coffee was prepared with milk. The patient drank two cups of it, and soon afterwards fell into

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a sleep, which continued an hour. She repeated this method during four months, constantly drinking her coffee in the middle of the night, and with the same good effects. This lady's sleep was not so good when she left off the coffee. This single observation is not related to prove the general good effects of coffee, but merely that from a certain peculiarity of temperament it was useful in this case (*u*).

Coffee seems to do less harm in countries where beer is the common beverage. I have seen many a good German at Gottingen, swallow twenty dishes

(*u*) Coffee has long been considered as a powerful sedative. To the case related by Dr. Z. it may not be amiss to add the following observation made by the ingenious Dr. Pereival on himself, "I awoke" says he, "at five in the morning with the head ach. My pulse was hard and full, and beat 92 strokes in a minute. I drank four dishes of strong coffee. In half an hour the pain in my head was relieved; yet my pulse still continued to vibrate the same number of times, but was softer and less full. In an hour it sunk to 70. In an hour and a half it rose again to 76, and in two hours to 80, which is the standard of its frequency in health. I was in a recumbent posture during the whole time of this experiment, which I have since repeated several times, under different circumstances, with no material variation in the result". *Essays, Med and Exp. vol. ii.* Coffee is found to counteract the narcotic properties of opium, and this seems to be the reason why it is taken so frequently, and in such large quantities by the Turks and others, who use much opium. Sir John Pringle says that coffee is the best abater of the paroxysms of periodic asthma, that he has seen. It seems that Sir John Floyer, during the latter years of his life, kept free from, or at least lived easy under his asthma from the use of very strong coffee. This discovery he made after the publication of his book on that disease.

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of coffee without feeling any ill effects from it. Nor does it do much harm amongst the lower sort of people who drink it exceedingly weak. But our people of fashion who pique themselves in being as polite and as refined as the French, drink very strong coffee after dinner. I am inclined to think upon the whole, that a moderate use of coffee does less harm than a moderate use of tea; but that an excessive abuse of coffee will be much more prejudicial than that of tea.

Chocolate has likewise a considerable influence on our health. It is chiefly prepared from the cacao which was altogether unknown to the antients, it being solely the produce of America. The preparation of chocolate from the nuts of this tree was known to the Americans long before any Europeans came amongst them. It was held in great esteem by them and constituted a considerable part of their food.

Of the different cacaos, the great cacao of Nicaragua is considered as the best. The little cacao of the Caribbee Islands is held in less estimation, but the best chocolate is said to be prepared by mixing the nuts of both in an equal proportion; the Caribbee nuts being more unctuous than the others.

The chocolate is in some measure spoiled, even at Mexico, by the addition of different spices. The same thing is done in Europe; where it is usual to throw in cinnamon, cloves, musk and amber. In South America chocolate is the chief article of diet. In Europe, it is consumed in the greatest quantity in Spain, Portugal and Italy.

Chocolate has been considered as a very powerful exhilarent and even aphrodisiac, but this seemingly without reason. I constantly find that it renders me dull and stupid whenever I take it, and the abuse of it in our climates certainly does harm. In weak and hypochondriacal and hysterical subjects it will be indigestible by being too unctuous. Nor will the liberal use of chocolate agree with sedentary people. It is very dangerous to persons of plethoric habits, and when joined to intemperance in other articles of diet, will surely dispose to inflammatory diseases and even apoplexy. In women I have seen it occasion suppression of the catamenia and fluor albus. On many occasions I have recommended a gruel prepared from oats, (slightly roasted) with the addition of milk and a little chocolate, and I prefer this to the use of common chocolate, which to its own bad qualities, joins the noxious properties of all the drugs and spices that are occasionally thrown in with a view to adulterate or improve it (*w*).

(*w*) The chocolate that is prepared in London, is much more perfectly triturated, and of course more easy of digestion, than the foreign chocolate, which usually throws up an oil on its surface. Dr. Cullen is of opinion that chocolate when well prepared is easily dissolved, and by being less flatulent than any of the farinaceas, is a very useful article of food where a liquid nutrient vegetable one is required.

C H A P. VIII.

Of Rest and Motion, considered as the remote causes of disease.

A Sedentary life, and violent or long continued exercise, have each of them their peculiar inconveniences, and may occasion various diseases. Too much exercise increases the rapidity of the circulation, disturbs the functions of life, occasions fevers, hemorrhages, &c. and when in a certain degree, death. These effects of violent exercise will be the more likely to take place, if they who are exposed to it have been accustomed to an inactive life, or if the weather is extremely hot, and the body not sufficiently nourished and refreshed. But the effects of a sedentary life are much more fatal to us than excess of exercise. The general effect of inactivity is to weaken the tone of the solids, and to disturb and deprave all the functions of the system. The body becomes gradually diseased, and subject to hemorrhoids, apoplexy, dropsy, and a long train of infirmities. Sometimes instead of painful disorders, sedentary men of a certain temperament become corpulent and indolent. And if this disposition, to corpulency is increased,
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by a free diet they at length become torpid, and may be rather said to vegetate, than to enjoy life.

Men of letters who confine themselves wholly to their books, and take no exercise, either lose their appetite, or can take only very light food. But notwithstanding the lightness of this food, and the facility with which it is digested, these people are for the most part extremely flatulent, feel an uneasiness in all their limbs, and a general anxiety which they are unable to explain. They are exposed to diarrhoea, and a variety of nervous affections: they pass uneasy days and sleepless nights, and shunning all the allurements to pleasure and dissipation, devote themselves to melancholy ideas, which diminish their little remains of health, till at length they become truly hypochondriacal, or what is worse, melancholy. Literary people, says Rousseau, are of all men, those who sit the most and think the most; and on these accounts they are the most sickly and unhappy. Even in the country we see the peasant become hypochondriacal, if he leads an inactive life. I live in a country where the peasants are very ignorant, and accustomed to the hardest labour, but they are well fed and drink good wine. These people are in general very gay and obstinate. Now and then, however, I meet with some of them, who are exceedingly melancholy, and this from their following some trade that requires a sitting posture. It is very usual for shoemakers, weavers, and others, whose business requires them to sit, and bend their bodies forwards, to lose their appetite, to complain of pain in their side, and dizziness, and to have a thousand fantastical ideas, together

gether with a slow and almost imperceptible pulse. I observe likewise that these people are as sensible to all the impressions of the air, as the most delicate women, on account of the weakness of their vital and natural functions, which is the foundation of hypochondriacal affection. Their perspiration also is easily checked, and they fall into all the disorders arising from this, with the same facility, as the finest lady would do in high life.

Certain postures or motions of the body, or any of its parts, when too violent, or too long continued may likewise be prejudicial. Thus, the remaining too long in a standing posture, or sitting or leaning forwards, or lying in an horizontal position, have each of them their inconveniences. Violent exertions in coughing or sneezing or laughing or even gaping, have sometimes produced bad effects. Carrying great weights or dancing will likewise occasionally do harm. Many more, such as singing, talking, &c. might be added to these, but we have mentioned enough for our purpose. I have even observed that the different employments of women occasion different nervous affections, and I am careful to attend to this in the treatment of such patients.



C H A P. IX.

Of Sleep and Watching, considered as the remote causes of disease.

SLEEP, which is of itself so useful and refreshing, may when indulged in to excess, become extremely hurtful. It is well known, that in sleep the waste of animal spirits is less than in a waking state; and that the action of the heart and arteries is proportionably diminished. The coldness of which every one is sensible in sleep, is the effect of this diminution of all the involuntary motions. Much sleep weakens and relaxes the body; the blood is at that time circulated more slowly; the insensible perspiration is likewise much lessened; and great and profound sleepers become extremely corpulent (x), and wholly incapable of any mental

(x) In sleep, the thinner evacuations are taken up by the absorbents; thus the urine voided in the morning is usually high coloured, and patients who have diarrhoea likewise have the best stools at that time. Internal stimuli are not perceived in sleep, unless they are very strong, such as cough, violent thirst, &c. A person may take a purging dose at night; and it shall not have any effect till morning, though if taken in the day time, it would perhaps operate in two or three hours.

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occupation: their memory, and all the other faculties of the mind, becoming gradually impaired by excess of sleep (y).

Hysterical and hypochondriacal patients, do wrong to sleep long, and especially in the morning. Sleeping soon after great suppers is often accompanied with disagreeable dreams. The incubus is a frequent complaint with those who are subject to flatulency and indigestion. An hypochondriacal patient told me one day, that he sometimes felt this distressful weight when in bed, even in his waking moments. His body on these occasions seemed immovable and exceedingly fatigued. He used to fancy at the same time, that he saw innumerable phantoms around his bed.

It would seem as if sleep ought to be proportioned to the exercise of the day, whether of body or mind. People of the greatest activity sleep the most, or at least the soundest. The necessity of sleep is so real, as Baron Haller observes, that one of the principal reasons which obliged the brave English garrison to yield Fort St. Philip to Marshal Richelieu, was that the troops, exhausted by want of sleep, were no longer able to manage their arms. The soldier sleeps even amidst the thunder of the cannon, when he is worn out with excessive fatigue.

(y) Boerhaave speaks of a physician, who taking it into his head that sleep was exceedingly conducive to health, indulged himself in it to such excess, that his sensibility gradually diminished and he at length died lethargic.

Immoderate watching exhausts the energy of the nervous system, and occasions acrimony in the blood vessels. They who are deficient in sleep are troubled with head ach, dizziness, hemorrhoids, extreme anxiety and a moroseness of temper. They who sleep much are seldom susceptible of violent passions, whereas they who sleep too little are usually lively and choleric. I have seen the most wonderful changes produced in persons of both sexes by want of sleep. The same cause, when in excess, will likewise occasion the most fantastical and absurd ideas, and even phrenzy. Persons who have died from want of sleep, have been found to have the brain perfectly dry, or in some degree wasted.



C H A P. X.

Of the Excretions and Retentions, considered as the remote causes of disease.

UNDER this head of evacuations we include the saliva, bile, foeces, urine, insensible perspiration, semen, catamenia, Lochia and milk.

We are not to confound the saliva with the mucus of the trachea and œsophagus ; because the latter ought to be rejected, and the saliva swallowed. He who rejects his saliva is the less disposed to hunger. This is the reason why soldiers and peasants often smoke with no other intention than to keep off hunger. The saliva seems to be of great use in digestion, and they who do not swallow it, complain of thirst and a dryness of the mouth, and lose their flesh. The ancients reckoned melancholy amongst the evils that arise from too plentiful an excretion of saliva ; but I have observed that this frequent spitting in melancholy and hypochondriacal patients is rather an effect than a cause of the disease. They who spit much in smoking, waste and fall from their appetite. Ruysch knew a man who was wholly deprived of his appetite, by a fistula in one of the salivary ducts.

The bile has considerable influence on health. It seems to correct acescency in the primæ viæ, and by its saponaceous quality to dissolve the glutinous and oily parts of our food, and blend them more intimately together (z). By the motion of a carriage or of a ship at sea, bile is sometimes made to flow into the stomach (a). There are people who can bear the jolting of an uneasy carriage, and yet cannot bear the gentle motion of an easy coach without vomiting.

The bile sometimes becomes obstructed in the liver and gall bladder, and flows out only in a very small quantity, or perhaps not at all. I saw few subjects of sixty years of age dissected at Gottingen, that had not some material affection of the liver. This in some measure might be from the great consumption of brandy there. But as men grow old, the liver becomes harder and diminishes in bulk. The abuse of spirituous liquors, as well as a sedentary life, occasions concretions in the gall bladder, by inspissating the bile and diminishing its flow into the intestines. This is the great source of indigestion, constipation and hypochondriacal affection. When the bile is not duly secreted and carried off in children, they become subject to spasm, and other diseases from acescency in the primæ viæ. When the bile is not duly carried

(z) The bile has generally been deemed saponaceous, but had no resemblance to soap; its blending water with oil is a property it has in common with all mucous fluids.

(a) The flow of bile in these cases, seems to be the *effect* and not the *cause* of the nausea and vomiting.

into the intestines it is absorbed, and carried back into the circulation by the lymphatics, and thus occasions jaundice. Indurations of the liver itself sometimes take place in these cases, and are the cause of dropfy.

Many writers have considered the bile as the source of almost every disease, but de Haen and Tissot have clearly proved the absurdity of this opinion. Perhaps Baglivi did right to ascribe certain diseases to a vitiated state of the bile, but we should be cautious not to give way to the imagination on this subject.

The fœces ought to be of a firm consistence in healthy people ; because it proves that all the nutritious parts of the aliment have been absorbed by the lacteals. When the fœces are too hard, they are liable to occasion head ach, opthaltmia, fever, especially in irritable habits, and sometimes hernia and even apoplexy. Obstinate costiveness occasions flatulency and even convulsions in hysterical and hypochondriacal subjects.

Navier found the rectum exceedingly distended in a young man who had hardly a stool in twenty days. The effluvia that arise from these retained fœces being absorbed and carried into the circulation occasion considerable acrimony, and eruption on the skin. I remember an hypochondriac, who during many months went to stool only once a fortnight. His stools were of a green colour, and yet notwithstanding this long constipation his appetite continued to be voracious, nor did his belly ever appear swelled. Trioen speaks of a constipation which continued three months in an old woman of eighty-four,

four, and terminated in death. Even the retention of wind is sometimes not altogether void of danger. Suetonius relates that the emperor Claudian having been told that some person had died a martyr to good manners by checking his inclinations in this way, issued an edict by which all persons had leave to break wind in every place.

There are as many bad effects from habitual diarrhoea as from too great costiveness. Diarrhoea is sometimes of a very salutary tendency, but when it recurs often, or is long continued, it generally indicates some defect in the abdominal viscera. I have often observed a diarrhoea in hypochondriacal and hysterical patients which has been not sufficiently attended to, or improperly considered as a salutary effect of nature. In many such patients this diarrhoea continues during several years; sometimes returning every day, sometimes only several times in a week, sometimes not quite so often. It deprives the body of its nourishment, exhausts the strength of the patient, and at length becomes the cause of diseases, of which it was at first only an effect. I am therefore not surprized that Dr. Zeviani should consider a lax belly as an unfavourable symptom in these complaints, and assert that a diarrhoea of only one day does more harm here than a constipation of fifteen.

The excretion of urine is more copious in cold than in hot countries, because the insensible perspiration is less. Women in general are able to retain

tain their urine longer then men (*b*). Too copious a discharge by urine becomes truly morbid, and constitutes a disease called diabetes. Gatinaria gives us the case of a woman who in sixty days had voided by urine 1740 pints of water over and above the quantity she had drank in that time, and yet she recovered. Boerhaave attended a studious young man, who was attacked with a white milky diabetes, brought on by the immoderate use of tea and coffee which he had taken to prevent his sleeping. This patient died consumptive, after being tormented with an incessant thirst, which no remedies could alleviate. Mundius, in the Bologna memoirs, relates the case of a nun who during 87 days voided 40 pints of urine daily, tho' her daily consumption of meat and drink amounted to no more than three pounds.

The retention of the urine is no less dangerous in its effects, and in general soon carries off the patient. Too great an accumulation of urine will sometimes happen in pregnant women. In some patients the bladder has been seen to rise above the pubis, and the great irritation, and excessive but useless efforts to evacuate it, have carried it downwards into the scrotum. In others, the urine has been wholly suppressed by the two ureters becoming obstructed; the one from some primary affection, and the other by sympathy. The too great distention of the bladder deprives it of its contractile faculty, and even

(*b*) This is to be applied only to healthy women, and seems chiefly to be the effect of habit.

bursts it, unless it is seasonably relieved by surgery. The celebrated Tycho Brahé, being in a coach at Prague with the Emperor, retained his urine through a false complaisance and when he afterwards tried to make water, his efforts were ineffectual and he fell a victim to his delicacy.

The insensible perspiration is different according to the diversity of climate, season, age, sex, diet, &c. In temperate climates the stools and urine seldom exceed four pounds in a healthy man who takes eight pounds of aliment in the four and twenty hours. The rest passes off by the insensible perspiration. The insensible perspiration is very great in hot climates and much less in cold countries. The insensible perspiration goes on freely in a clear heavy air, and is more interrupted when the atmosphere is light and obscure. Old people perspire less than young ones, because in old age the evacuations by stool and urine are more copious than in youth. Indigestible aliment diminishes this evacuation, while on the other hand liquid food and such as is easy of digestion increases it. It is likewise considerably increased by the use of hot bathing.

When the insensible perspiration is increased to a certain degree it is distinguished by the name of sweat. This weakens the body exceedingly; sweat being contrary to nature, and physicians very justly considering it as a dangerous disease, when it is in excess or too long continued. Sweat ought never hardly to take place in a healthy subject, unless he uses some violent exercise, or commits some error in diet. Sweat can therefore only be accidentally useful

ful in certain circumstances. The more we perspire beyond the usual standard of health, the more we are weakened. This weakness is the more evident, as we are able in many cases to remedy it by taking a glass of wine and a little nourishment. All well informed physicians are agreed on this head. Ignorant practitioners, nurses, and the vulgar in general, do indeed extol the utility and wholesomeness of sweating, and imagine that it saves the patient, and carries off the vitiated humours. But they do not consider or perceive that this ill-grounded prejudice has every day the most fatal effects. Their experience does not extend so far as this.

I have seen many persons, who in other respects were men of sense, extremely obstinate on this head, and who from excessive sweating have been attacked with inflammatory diseases or rheumatism or cutaneous eruptions or phthisis or have perhaps become the most melancholy instances of hypochondriacal affection, after having converted their bodies into so many vapor machines, with a view to remedy imaginary ills, or more strictly speaking, to aggravate disorders which would have yielded to the slightest remedy, judiciously applied.

Diminished perspiration is by no means so dangerous as too great an excretion in this way, because the urine is then secreted in increased quantity. But there are many inconveniences resulting from a sudden suppression of the perspiration; such as colds, catarrhal fevers, erysipelas, rheumatism and even palsy.

Nor is it less dangerous to expose one's-self to the night air, especially in hot countries. Colics are

very frequently occasioned at Rome by exposure to the evening damps of the hot season. Similar complaints are observed in Jamaica and Malabar. We are told in the Chinese book Tchang-Seng, that they who repose themselves too long a time in a situation open to the dews, are liable to palsy or at least to diarrhoea.

There will likewise be danger in suddenly checking the sweat (*b*). I have seen an incurable deafness and other disorders result from this cause. It is well known that Scarron's last illness was occasioned by his throwing himself, with his pores open, into the Seine.

Man being intended by his maker for procreation, the effusion of the seminal juices is as conformable to health and nature, as any of the other excretions; but when ever this effusion is carried to excess by lawless irritation and a heated imagination, the most baneful symptoms may necessarily be expected to follow. All physicians have agreed that the loss of an ounce of seminal liquor weakens the constitution more than that of forty ounces of blood. The pleasure of venery is a kind of epileptic motion, and the relaxation that succeeds it, is proportioned to the violence of the preceeding spasm. Aretæus speaks of this robust liquor as rendering us lively, bold

(*b*) Much will depend on habit in these matters. It is a very old practice of going from the hot to the cold bath. The Romans did this; and all ranks of people in Russia bathe twice a week in water heated to 160°, and immediately, with the pores reeking, go and rol. in the snow.

and

and animated, giving us a firm and manly voice, and fitting us for great undertakings. It is certain that excessive venery exhausts all the powers of our nature by weakening and destroying the energy of the nervous system, and thus sapping, as it were, the very principle of life. The miserable victims to this passion begin by losing their strength and flesh, and by having the functions of all the viscera gradually impaired; hence indigestion, weakness and dimness of sight, head ach, tremor, hypochondriacal affection, epilepsy, and even phthisis pulmonalis. The body in these cases becomes extremely languid; the soul seems to be deprived of all her faculties; and the consideration is rendered still more melancholy when we reflect that these unhappy subjects are generally in the flower of their age. This excess is the gulph that absorbs the best and most useful part of the state. The licentiousness that prevails in all great cities is the reason why we see so many weak heads, so many useless citizens, who were blasted as it were in their bud, by the lawless pleasures of their better days.

Marriage unfortunately does not exclude these excesses, and the evils that result from them. There are many husbands who exhaust their health in this way, and become the fathers of an infirm and sickly offspring. The excess of venery seems to be the reason why the inhabitants of hot countries feel so soon the approaches of old age. The women in hot climates seldom bear children after their thirty-fifth year. This premature old age cannot be attributed to the heat of climate, because the Brachmans by a regular life, and abstinence from venery, attain to

very advanced years. The heat of climate may, and indeed does stimulate the desires, but it is the indulgence of these that does harm.

Premature old age is not the only consequence of these abuses. Their first effect is to occasion involuntary emissions which weaken the patients exceedingly. These pollutions may be excited indeed by innocent means. The idea of a beautiful woman, says Baron Haller, may be one cause, but this is not enough to occasion infirmity. The effects we allude to, occur without the least stimulus or idea of a woman, even in the midst of the most serious occupations, and such as are the most opposed to voluptuousness. In these cases there is evidently a relaxation of the spermatic vessels.

When these emissions are the effects of voluntary excitement in young persons we see them feel at a more advanced age the sad effects of their former misconduct. They have frequent pains at the stomach, vomiting, pains of the breast, loins, thighs, and legs. Their eyes are sunk and hardly able to support a strong light. I have been told by a very careful and attentive master, that young people, who have indulged themselves in this distressful vice, are unable to support themselves even in a kneeling posture, and sometimes faint in their position; that they have a sickly countenance, their eyes sunk, their ears of a dull white, and their lips of a pale complexion. That they have no appetite, and often complain of pains in the breast and great thirst. Aretæus has likewise very well described to us the effects of these pollutions, whether voluntary or involuntary.

voluntary. Too frequent a waste, says he, of the seminal fluid brings on the infirmities of age prematurely, and renders men indolent, languid, sickly, effeminate, and impotent negligent; in every thing, and unfit for any occupation (c).

I likewise consider this abuse as one of the principal causes of hypochondriacal affection, the nature of which is so little known altho' its effects are so generally felt. This unhappy disorder may be, and indeed is the result of many other causes, but it will be always more dangerous in proportion as it is brought on by excess of venery. It is wonderful to see how many young men, who from being gay, lively, and in perfect health before marriage, become some months afterwards sickly, melancholy, indolent, and in one word, hypochondriacal. I have likewise seen people plunge themselves into all the horrors of this complaint, by marrying when the flower of their age was over, and when their powers had begun to suffer from the injuries of time. Plater speaks of a man who married in advanced life, and who was seized with so violent a spasm about the breast, on his wedding night, as to die in the arms of his wife. Salmuth saw a learned but hypochondriacal man become truly phrenetic from the

(c) If an apology for altering and mutilating the expressions of Dr. Z, is any where necessary, it will be particularly so in this part of the work, where I say much less than he has said, and with considerable variations. The truth is that some of his observations, tho' exceedingly just and useful, seemed improper for readers of every class, and they who read with a view to instruct themselves in physic will find the same things in a work written by Dr. Tissot.

same cause. Dr. Tissot knew a man who in his fiftieth year married a young wife, became blind three weeks after marriage, and died at the end of the fourth month. If the senses corrupt the mind, the latter in its turn may be said to deprave the senses, when we indulge a cupidity that proceeds altogether from the imagination; or from an incontinency, that is habitual even after nature herself is silent.

A combination of melancholy with hypochondriacal affection is likewise one of the effects of this abuse. A patient in this state sometimes seeks for relief in the embraces of his wife, and this constantly adds to his complaint. Incontinency melts down all the powers of the soul. Socrates used to reproach Alcibiades with spoiling the finest genius in Greece by his libertinism. Newton, at the age of eighty-five, carried with him to the grave what most of our young men lose before they are fourteen. In short married people have been seen to bring on a variety of diseases by their incontinency. Some have lost their eye sight by a cataract; others have died of hemophthisis; or after languishing many months, have been carried off by *tabes dorsalis*.

Physicians, who are accustomed to the great, know how considerable a share libertinism has in aggravating and complicating their disorders, and rendering them no longer distinguishable. It is to this cause that Dr. Tissot attributes the fatality which in general accompanies the disorders of people of fashion. Women are in general much less incommoded by their incontinency than men. In certain circumstances, however, abuses in this way are extremely

trely fatal to them. It seems more especially to be one of the great causes of the frequency of abortion, and Werlhoff is of opinion that without an attention to this article, all our remedies to prevent miscarriages will be ineffectual. I have had more than one opportunity of confirming the truth of his observation.

The catamenia in women are very different according to different circumstances. In hot countries they appear at an early period. In Italy and Spain women begin to menstruate at twelve years of age, and this is the reason why girls are declared marriageable at that age, by the Roman law. Shaw tells us that in Barbary the women bear children at eleven years of age, and are grand mothers at four and twenty. At Goa, girls conceive at nine, ten and eleven years of age, and are past pregnancy at thirty. Women do not begin to menstruate till a later period in cold and mountainous countries: in general, at fourteen years of age. If the catamenia appear much earlier than this, it is the effect of a very particular temperament: if they are delayed till the eighteenth year, it is a disease. The evacuation is in the greatest quantity in temperate climates: in very hot countries it is much less. Women who are much habituated to violent exercise, likewise menstruate but little. This is the case with the women in Brazil who do all the laborious work. Very fat women likewise menstruate but little when they drink sparingly, and are not voluptuous. They are not much affected by irregular menstruation, but the approach of the catamenia is commonly announced by very acute colic pains. Women of a melan-
choly

choly temperament menstruate little and irregularly. A voluptuous life constantly adds to the frequency and quantity of this evacuation: this is the reason why women who live luxuriously in large towns generally menstruate every fifteen days. Lascivious girls are likewise subject to frequent menstruation. Love says Baron Haller animates the motion of the blood, augments the number of pulsations, and occasions an inequality in the pulse, which may be ascribed to the fear which is the inseparable companion of love: a violent passion as it approaches the moment of enjoyment is accompanied with extreme heat, violent pulsation of the heart, sometimes increased activity, sometimes tremor, and gives as it were the sensation of fire circulating through the blood vessels: This is the reason why in women of warm passions the catamenia sometimes take place previous to the moment of consummation. Various symptoms announce the approach of the menstrual period. The generality of women feel a tension about the sacrum, head ach, and pain in the breast: some have diarrhoea; others nausea, vertigo, and cramps. This flow commonly goes on increasing, till the third day, and gradually diminishes till the sixth. In some women it continues only two days, in others during eight; but in these last there is usually something amiss. In young women the catamenia, after their first appearance, sometimes do not return again for a year, and are some time before they follow a regular period. In general, the menses appear every thirty or thirty one days, and cease during pregnancy, but to both these rules there are many exceptions. An immoderate flow of the menses (*Menorrhagia*) like all other hemorrhages, is extremely prejudicial to health. The
external

external parts of the body become cold and pale; the patients are subject to nausea, head ach, languor, cramps, syncope, hysterical affection, and even convulsions. If the discharge continues to a certain degree, it occasions dropsey, as I have seen happen in a woman thirty-five years of age, who, during six years, was subject to continued menorrhagia. First her face began to swell, and then the rest of her body, till at length she became truly dropical. Others are attacked with flow fever, in consequence of menorrhagia, which terminates in consumption. In some it occasions sterility, and in others abortion.

We ought not to omit in this place the flow of the menses beyond their usual period. It is well known that the catamenia flow irregularly and more copiously as they approach their final period. Hence it has been considered as exceedingly useful to have these latter discharges of a longer duration, which take place about the fiftieth year. The flow is, in general, morbid only when extended beyond that term, and this is by no means uncommon, for I have myself seen it beyond the seventieth year. But whenever continued beyond the fifty-first or fifty-second year, it occasions morbid symptoms even in women who have before this period enjoyed the best health. It is not unusual to see this final suppression preceded by cramps, vertigo, and even syncope. I have several times seen these cramps affect the bladder with inexpressible pain, and occasion a retention of urine which continued a day or two.

When the catamenia continue beyond the fifty-fifth year, they commonly occasion dropsy, or there is some hidden disorder, perhaps cancer, in the uterus. Thus a woman seventy-one years of age, after having had a return of this flux during four years, had a suppression of the discharge by exposure to cold when at church, and soon afterwards a cancer manifested itself in the uterus, and after exciting the most horrid symptoms carried off the patient in two months. Boerhaave tells us that uterine hemorrhage happening between the age of fifty and sixty years usually terminates fatally.

A suppression of the menstrual evacuation is likewise productive of many inconveniences. Languor, depravation or loss of appetite, nausea, flatulency, palpitation of the heart, tension of the breast, hysterical suffocation especially when in bed, dry cough, difficulty of respiration, blueish circles around the eyes, head ach, dizziness, violent pains of the joints, cedematous swellings of the legs; these are the more general effects of obstructed catamenia. Sometimes, tho' more rarely, the patient falls into melancholy from this cause, as I had occasion to observe not long ago. In some patients the menses are seen to flow from different parts of the body. Many instances of this sort are related by authors. I myself have lately had the care of a patient sixteen years of age, who as yet has had no flow from the uterus, but for a twelvemonth past, has pretty regularly had an hemorrhage from the nose every month, which has continued two or three days. Whenever this discharge has omitted to take place, she has constantly complained of colic pains, extreme anxiety, appears
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lad, and has a very slow and weak pulse. Another patient, aged twenty-eight years, and who from suppressed catamenia had experienced the symptoms usual on such occasions, at length was attacked with hemoptoe, which returned with great violence every month, during six months, but on the seventh month it failed in its appearance, and the patient had a violent pleuritic stitch, accompanied with a smart fever and delirium. Some years previous to this, the same person had menstruated from the extremity of the index.

Dr. Schobinger of Saint Gall, has seen a girl whose hands regularly swelled at the approach of the menstrual period, till at length nature relieved herself by a discharge from the two fore-fingers. Hippocrates tells us that suppressed catamenia are the cause of beard in women. I will not undertake to say, whether this opinion is well founded or not.

We have before observed that the cessation of the menses does not always take place at the same period. In robust and corpulent women they sometimes disappear at thirty-five. In delicate women they return till a later period. In general the time of this cessation is considered as of great consequence to the health of women. In many it is attended with no change of health. Delicate subjects, who have been accustomed to profuse discharges, find themselves relieved at this period. But this is not the case with all. In many women, the natural surplus of blood continues to take place, although the organs that are destined to evacuate it are closed

up ; or these organs may continue to be unchanged, or at least not wholly collapsed, after the usual accumulation has ceased to take place. These, therefore, will be the principal sources of female diseases at this period of life (*d*).

The lochia may likewise be mentioned here, because this discharge is of the greatest consequence in the recovery of lying-in women. This evacuation for some days after delivery consists of pure blood, till at length by the contraction of the uterine vessels, and the increase of milk in the breasts, it gradually becomes serous and less copious, and in the space of a fortnight, or little more, generally ceases. In some women it continues only ten days, and now and then not so long in subjects who have been accustomed to menstruate in small quantity, and whose vessels are of little diameter, or who have had much flow during the first days after delivery.

An immoderate flux of the lochia is supposed to be very often fatal to young and robust women. This may indeed be true ; but the hemorrhage in these cases is very often the effect of some injury done to the uterus in delivery. Profuse lochia differ not from profuse catamenia when the uterus is unhurt.

A suppression of the lochia is commonly unfavourable, and very often dangerous. It will be less alarm-

(*d*) The reader will do well to consult a very ingenious paper, on the management proper at the cessation of the menses, by Dr. Fothergill, in the vii. volume of Med. Obs. & Inq.

ing in women who usually menstruate in small quantity, but whenever this salutary discharge is suddenly checked by exposure to cold, or other causes it commonly occasions disagreeable symptoms. Baron Haller has seen the blood diffusing itself through the orifice of the fallopian tubes, and this more particularly in cases where the neck of the uterus was contracted. This is a circumstance worthy of observation, and which does not seem to have been sufficiently attended to.

A woman came to consult me not long ago, who twenty years before this had drank a bottle of cold water immediately after her delivery, by the advice of her midwife, with a view to prevent her sweating. The lochia were suppressed by these means, and brought on a cough, which degenerated into incurable asthma. Her menses have never appeared since that period. A suppression of the lochia is now and then succeeded by deep melancholy, or by a true phrenzy, which is commonly periodical. I remember to have seen a woman thirty years of age, who fell into a profound hysterical melancholy from this cause. This woman was affected with extraordinary timidity, and conceived a singular aversion for all the ideas which before this had been the most flattering to her: she complained incessantly of head ach, was averse to all food, felt a languor in all the parts of her body, her legs trembled, and she had a frequent sense of suffocation. Baron Van Swieten tells us that lying-in women sometimes fall into incurable mania from some affliction of the mind, and this we may reasonably ascribe to the same cause. Dr. Hirzel, of Zurich, has seen a suppression

suppression of the lochia brought on by extreme grief, and succeeded by universal tetanos. A woman at the age of thirty six was delivered of her first child, which died soon after its birth. She had always been of a timid disposition, and inclined to melancholy, and joined to these, other marks of a weakness of the nervous system. The patient had fatigued herself extremely, during her labour, through the imprudent sollicitations of an ignorant midwife, and her strength was so much exhausted by these exertions, that she became convulsed, and now and then delirious. The first day after delivery the lochia flowed in small quantity, and the next day wholly disappeared. During the whole of that day, the delirium returned from time to time, her pulse was strong and quick, she sweat abundantly, and voided her urine without difficulty. The third night she slept pretty well, but still her pulse continued as before, and she complained of violent thirst: the lochia came down again a little, and the patient became more chearful. The night between the fourth and fifth, she was very restless, and complained of violent spasmodic pains in the lower belly; the pulse was equal, the urine white, and the lochia appeared in very small quantity. The pulse softened, the sweat diminished, and she slept composedly: but she fell insensibly into a deep melancholy, which increased exceedingly on the eleventh day, after an uneasy night, and the following evening she was seized with an universal tetanos, which continued all the next day, till the evening. On the fifteenth she had a miliary eruption. This patient recovered, but nine months elapsed before the melancholy left her. This case proves, how
grievous

grievous may be the symptoms resulting from a suppression of the lochia (*e*), when any passion of the mind is the cause of such a suppression.

Too copious a flow of milk may have bad effects, especially if the woman is of too delicate a habit. If this flow is encouraged by giving suck, the patient becomes languid, loses her cheerfulness and appetite, feels cramps, head-ach, and sickness at the stomach, and unless seasonably relieved, hectic fever comes on, and the patient falls into consumption. A pregnant woman who gives suck, will be in danger of abortion, and the milk she gives will be unwholesome.

The suppression of the milk is likewise very often productive of disagreeable effects. The fever which usually supervenes a few days after delivery, when the breasts become turgid with milk, is seldom either dangerous, or of long continuance, and terminates with the relaxation of the distended parts, and a gentle diaphoresis. But in some cases it occasions indurations of the breasts, which degenerate into abscesses, or remain hard and indolent during a series of years, and at length become cancerous. Sometimes a sudden repulsion of the milk has occasioned inflammation of the uterus.

(*e*) The Reader who considers the state of this patient previous to her lying-in, and her violent exertions during labour, will perhaps be disposed to ascribe all these symptoms to morbid irritability, and weakness of the nervous system rather than to the suppression of the lochia, which seems to have been only an effect of the disease. I did not chuse to suppress the case, however, because it may have its use.

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We have now examined, in a general way, the various effects that are liable to be occasioned by the morbid state of the excretions; and however great the number and diversity of these may seem to be, they are, perhaps, not difficult to be distinguished, when we know how to appreciate the effects of each cause, and are able to combine them properly. It so commonly happens that one particular excretion, by being vitiated, produces some morbid change in one or more others, that it will be almost always necessary to consider the state of several of these, to be the better enabled to estimate the effects which seemed to be derived wholly from one. The Physician ought to know at the same time, that the same changes do not always excite precisely the same effects, because these will be variously modified by different circumstances, of which he ought to be previously aware, since without this knowledge, he will only see things improperly, or in part.



C H A P. XI.

Of the Passions, considered as the remote Causes of Disease.

TRISTRAM Shandy, has with some pleasantry compared the body and soul, to a coat and its lining ; if you rumple the one, you rumple the other.

Some physicians have attributed to the soul, a certain *impetus* (*ερεθισμός*), or *impulsive power*, and another to the body. The former, according to them, is the efficient cause of all the violent passions ; the latter, the efficient cause of all the violent movements which the body executes by means of the nerves. This doctrine is as ancient as Hippocrates. Kaw Boerhaave has spoken very fully on it ; but Gaubius, better and with more precision (*f*). I understand by this *impulsive power*, simply the temperament ; because I am of opinion, that by this, all our passions sentiments and actions are determined. I do not mean, however, to investigate the

(*f*) See his *Institutiones Pathologiæ*. Page 74, & seq.
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theory of the passions, because this would be to deviate from the plan of my work, I shall, therefore, proceed to enumerate some of their more general effects,

The Passions act either suddenly with more or less energy, or slowly. They are either productive of sudden death, or they are only the remote cause of death, or they undermine us gradually. The power and extent of the cause, but above all, the temperament, will always determine the degree of danger. A man, who with little penetration, has a great share of vivacity, will hardly feel a contrast which will terrify almost to death another person who with less vivacity, and more penetration, perceives at once all that may result from it. A stupid fellow cannot conceive how other people complain of injuries to which he is altogether insensible; but on the other hand, this man suffers from a thousand apprehensions which others of better sense feel not, because they know them to be groundless. In general, men of a powerful imagination suffer the most from violent sallies of the soul; and they who have more of reason than imagination, suffer most from the slower movements of the mind. Very indolent or stupid people, in general, suffer the least from the Passions, but they who unite an enlightened reason to a lively and reflecting genius, are the most agitated by them. Boerhaave, who was a man of so much moderation, said he was convinced by his own experience, that the remembrance of an injury is not to be lost, however much we may endeavour to forget it, unless some more powerful and permanent idea comes in to efface the remembrance

brance of the first : he adds, that the mind is even occupied with it in dreaming.

All the passions, when carried to excess, bring on very formidable diseases. Sometimes they occasion death, or bring us at least into imminent danger. The most reputable physicians agree in opinion, that terror may occasion apoplexy, and death ; and indeed, they consider apoplexy as the most common effect of violent Passion. The heart is so violently affected by these extraordinary impressions, that it collapses so as neither to receive nor emit any blood. This is the reason why the face becomes pale, and the lips of a blueish complexion, whilst all motion ceases, and a person sometimes falls down dead instantaneously. A Passion, without even being carried to excess, will sometimes occasion a difficulty of breathing, together with a sense of stricture in the breast, and an hesitation to speak, the tongue remaining as it were immoveably fixed to the palate. The weaker Passions speak, the stronger Passions are mute.

Altho' the play of the Passions depends principally on the temperament, and they are to be considered as the unfolding of the sensitive faculties applied to a certain object, and to a certain degree, yet still it is the soul that determines them as a secondary cause.

Hysterical and hypochondriacal affection, and likewise melancholy, may indeed arise from many physical causes : but these diseases are likewise sometimes the effects of grief in the most healthy

people, altho' we are unable to say how this is effected.

Violent transports of the mind, will likewise occasion the return of particular diseases, at a time when from the state of the patient there would seem to be nothing to fear. This is particularly instanced in epilepsy. I have likewise observed that in hysterical women when the disorder was in a high degree, the spasmodic affection becoming less violent and frequent, was not so much to be considered as a sign of their recovery, as their beginning to be less affected by certain ideas, which in health produced no perceptible effect, but which, when the disease was present, constantly excited a fixed and terrified look, difficulty of respiration, and spasmodic movement of the limbs. The body follows the affections of the soul in these cases, and acts as the soul feels. It will therefore not be amiss for us to consider the principal effects of the most sensible Passions, because different Passions very often produce different effects ; or the same Passions may excite different circumstances, either in the same or different individuals.

Joy, which Cicero has very well defined, *a voluptuous transport of the soul*, and in which he contended a wise man ought not to indulge himself, altho' he himself confesses in an unexpected moment to have given into it even to excess ; this Passion I say is much more dangerous to life, than sudden grief. The instances we meet with of the fatal effects of sudden joy, are more numerous than those of the latter. Sophocles, being desirous of proving
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ing that at an advanced age he was in full possession of his intellectual powers, composed a tragedy, was crowned, and died through joy. The same thing happened to Philippides the comic writer. We see Chilon, of Lacedemon, embracing his son who had borne away the prize at the olympic games, and dying in his arms. Two Roman ladies, seeing their sons return from the battles of Trasymenus and Cannæ, died in the same manner. M. Juventius Thalna, on being told that a triumph had been decreed to him for having subdued Corsica, fell down dead before the altar at which he was offering up his thanksgiving. Vaterus relates, that a brave soldier, who had never been sick, died suddenly in the arms of an only daughter, whom he had long wished to see. A worthy family in Holland being reduced to indigence, the elder brother passed over to the East Indies, acquired considerable riches there, and returning home, presented his sister with the richest jewels: the young woman, at this unexpected change of fortune, became motionless and died. The famous Fouquet died on being told that Louis XIV. had restored him to his liberty. The niece of the celebrated Leibnitz, not suspecting that a philosopher would hoard up treasure, died suddenly, on opening a box under her uncle's bed, which contained sixty thousand ducats. Dr. Mead tells us that in the memorable year of the South Sea bubble, more of those went mad who acquired fortunes, than of those who lost them.

Laughter, when in excess, has sometimes occasioned death. Thus it is related of Zeuxis, that having painted an old woman and attentively considered

considered the picture, he found it so singularly grotesque as to die through laughter (g) Philemon was walking in a garden, with his friends, when an ass came trotting towards them, and with great composure ate a dish of figs. "This ass, (said Philemon,) would, perhaps chuse to have wine with his figs;" the wine was brought, the ass drank it, and Philemon laughed to excess, and died.

Anger is a violent transport of the soul joined to a desire of revenge. The effects of this passion seem to be to stimulate every thing that is sensible and moveable in man. The face reddens, the eyes sparkle, the muscles are contracted, and the heart beats with increased quickness, even an hundred and forty strokes in a minute. Violent anger has sometimes produced hemorrhages and subcutaneous extravasations; or some vessel of the brain becoming ruptured by these transports, a fatal apoplexy has taken place. Sometimes the whole mass of blood seems to retreat towards its centre, the cutaneous veins disappear, the face becomes pale, the voice is faltering or altogether lost, an universal tremor takes place, and the person who is thus affected, totters, and at length falls down in a state of insensibility, and perhaps dies, unless nature is speedily relieved. There have been some instances of excessive anger being succeeded by epilepsy, colic, or a violent degree of fever.

(g) This anecdote of Zeuxis is probably fabulous.

I was called not long ago, in company with Dr. Wæterli, to a young woman who had fallen into a convulsive state in consequence of a violent fit of anger. Her menses had appeared that day, but were checked by this transport; she seemed to have an extreme stricture of the breast, and was unable to swallow, or to speak; but yet as she sat supported in her chair, her legs trembled with violence, and she groaned incessantly during the hour she continued in this state. I recommended emollient clysters, with a view to recall the catamenia, and Dr. Wæterli proposed bleeding in the foot; both these methods were tried: at length, after repeated clysters, the patient voided much bilious matter both by stool and vomit, the spasm ceased, and the menses began to flow copiously again, before morning (*h*).

Violent anger has sometimes the effect of exciting an increased flow of bile. In some, this occasions vomiting; in others, it passes off downwards, and causes diarrhoea; or by being retained, from a stricture of the gall ducts, will perhaps be absorbed, and thus occasion jaundice. In cases where anger has been succeeded by extreme grief, obstructions have taken place in the liver. Delicate women sometimes void a considerable quantity of pale urine in these circumstances, and hysterical women, after violent anger, are affected with pains

(*b*) This case seems to have been truly an hysterical paroxysm. Of all the occasional causes of hysterical affection, violent passions of the mind are those which throw the animal economy into the most sudden and surprising commotions in persons of great sensibility; and it is well known that women are the most irritable during the flow of the catamenia.

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in the joints, spasmodic colic, and sometimes with uterine hemorrhage.

The effects of terror are merely similar to those of anger, but in general are more violent. Like anger it occasions sudden palpitation of the heart, weakness and trembling of the knees, so that a man in this state is unable to save himself by flight. The menstrual evacuation, in women, is much oftener checked by terror than by anger. Sometimes excessive terror seems to give men a preternatural degree of strength, as is the case with madmen, and drowning persons. In some cases, terror has not only excited immediate convulsions, but has occasioned them to return periodically. Dr. Tissot tells us of a peasant who having dreamt that a serpent was twisted around his arm, exerted some violent effort to relieve himself from this supposed enemy, and his arm was for a long time subject to a violent convulsive motion, which returned three or four times a day, and sometimes lasted an hour. Epilepsy is indeed sometimes cured by excessive fright, but it is the more usual effect of terror to occasion this disorder. Wepfer has given us a case in this way, where the patient first became epileptic after an excessive fright, and afterwards died apoplectic. I remember to have seen a woman at Gottingen attacked with epilepsy from being suspected of having killed her child. But here is a fact which will always do honour to the sagacity of Boerhaave. A girl, in the hospital at Harlem, upon receiving a great fright fell into convulsions. Immediately, all who crowded round her to see or assist her, were seized in the same manner. For the

the space of two days, the disorder continued to be propagated; attacking one person successively at the sight of another, till almost all the boys and girls in the house, laboured under the paroxysm. The physicians of the place assembled, and prescribed the most powerful nervous medicines without any effect; at length, recourse was had to Boerhaave, who observing in what manner the disorder was communicated, resolved to try the force of an expedient which might affect the imagination. Accordingly, ordering several portable furnaces to be placed in the apartments, on which were laid burning coals, and hooks of iron of a particular shape, he informed them, that since medicines had proved ineffectual, he knew of no other remedy than that the person who should be seized with the next paroxysm, whether boy or girl, should be burnt in the arm with a hot iron, as far as the bone. All were struck with such terror, on hearing this sentence announced, that when the paroxysm would again have seized them, they endeavoured with all their power to resist its progress, and their resolution was attended with success. Abraham Kaau Boerhaave, the nephew of the celebrated professor, who relates this fact at length, concludes it with observing how useful it is to turn aside the mind from an idea on which it was too intent, it being well known, says he, that fright, an epidemical fever, salivation, matrimony, and even the rod, (*virga*) have removed epilepsy (*i*).

(*i*) It has been observed in the infirmary at Edinburgh, that women have been seized with hysteric fits, from beholding others attacked with them.

Fear has been said to make the hair stand upright, and to contract the pores from which the hairs issue in the same manner as cold does. There are instances in authors even of the colour of the hair being changed by excessive fright. Thus Pechlin relates that a young man, who was shipwrecked near Leghorn, became suddenly grey, and was so twenty years after this accident, tho' before this his hair was black. Stahl speaks of a young man of family, who being condemned to death for some enormous crime, became grey likewise in the space of a single night (*k*).

Many observations tend to prove that sudden fear has occasioned syncope and even death(*l*). The face grows pale, the blood seems to stop in the vena cava or in the right auricle of the heart, the vessels become distended, and the heart itself in these cases has sometimes burst. Philip II, king of Spain only said to his first minister the cardinal Espinosa, *Cardinal know that I am master*: and the minister was so much terrified that he died a few days afterwards. The same prince perceiving that one of his ministers answered him with some hesitation, gave him a severe rebuke; the minister withdrew from the apartment and died. Philip V, died suddenly on being

(*k*) Stahl relates this story on the faith of Schenk; there are many similar cases related by authors, but none of them are perhaps sufficiently authenticated to be admitted as facts.

(*l*) The French physicians who wrote on the plague at Marseilles went so far as to deny its being contagious, and ascribed its propagation chiefly to fear. Dr. Mead has sufficiently pointed out the ridiculousness and danger of this opinion. Fear may indeed render men more susceptible of contagion, and this is all that can be ascribed to it in such cases.

told that the Spaniards had been defeated, and on opening him his heart was found ruptured.

The apprehension of some unavoidable ill, weakens and relaxes all the powers of the system, diminishes the pulse, suppresses the catamenia, causes a difficulty of respiration, and sometimes checks the insensible perspiration and occasions shivering. In some cases, however, it excites sweat; or brings on an involuntary excretion of the fœces. Baron Haller has seen this happen to persons who ascended the Alps for the first time. Boerhaave speaks of a man who had an involuntary emission, on being told that he had lost a law suit. Others when much frightened have an involuntary discharge of urine. A young lady, who had been told that persons of genius are never superstitious, was one day expressing the most sovereign contempt for all the idle tales of apparitions. There happened to be of the party one of those men who do not easily take words for things, and this person resolved to put the young lady's philosophy to a trial. He therefore fastened a string to the bed clothes, and conveying one end of it into the next chamber, in the night when she was in bed and asleep, began to pull gently; the young lady started out of her sleep and screamed with great terror. The company came in with lights, and found her in the middle of the room exceedingly agitated, and the floor covered with urine.

Timid people are more liable than others to fall sick. A firmness of mind is one of the best prefer-

vatives against contagion. Rivinus attributed the propagation of the plague at Leipzig wholly to fear (*m*).

Willis has very well observed that they who fear the small-pox the most are generally the first to be attacked with it. Cheyne assures us that fear is extremely prejudicial in all epidemical diseases. Dr. Rogers remarks that fear constantly increases the ravages of a contagious disease. Baron Van Swieten has seen in a female patient a schirrous tumour of the breast, the first rudiments of which were in consequence of a fright.

Fear is extremely prejudicial to delicate people, and above all to hypochondriacal and hysterical patients, because these subjects from their excessive sensibility are susceptible of the least impressions, and

(*m*) Dr. Z. relates in the original a very long Case which he ascribes wholly to fear; but I have suppressed it, because I think there can be no doubt of its having been occasioned by infection. It relates to a lady, whose child was afflicted with tinea, which she had carefully cleaned and attended to. One day, after having done this, she sneezed violently, and immediately fancied that she was infected: A day or two afterwards she had an eruption on her head, and a soreness and inflammation at the tips of some of her fingers. The patient was of a very irritable habit, and this complaint occasioned many painful symptoms during six months. Dr. Z. likewise speaks of a timid Ecclesiastic, who, on putting on a pair of breeches that came from a neighbouring town where the dysentery prevailed, was struck with apprehensions of the disease, and actually experienced it in a very dangerous degree. Dr. Z. ascribes the disorder in this case also to fear; but I should rather apprehend that the breeches were infected.

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the latter are continually suffering from imaginary ills. Tulpius tells us of an indolent man who was rendered miserable by reading medical books. An Hypochondriac who studied under Boerhaave used to fancy he had the disorder described in each lecture. The imagination of this man was indeed so powerful, that he commonly appeared to have something like the disease he had heard explained.

Fear generally increases the danger and fatality of diseases, disturbs their ordinary course, and occasions new and unusual symptoms. It weakens the powers of nature so much that the disease becomes superior to every remedy. I remember to have seen a man ill with a miliary fever, which seemed to be going on favorably, but a sudden fright proved fatal to him, and he died within half an hour after it happened.

The idle stories of apparitions, haunted houses, and witchcraft, which are so generally told to children, give them impressions of timidity, which they afterwards find difficult to remove, even in advanced life and with the best sense. I could relate many instances of the fatal effects of these impressions both in children and adults. Some time ago I had the care of a poor woman of seventy years of age, who had an erysipelatous fever which was very long and dangerous in its course, and was apparently brought on by the dread of an apparition. This poor woman lived in a lonely house which had the reputation of being haunted, and she one night fancied she saw in the person of a large mastiff, the much talked of spirit. Her terror was excessive, she shrieked out, and fell down in a state of insensibility.

lity. When she came to herself she complained of anxiety, sickness, at the stomach, and extreme head ach, the next day she had considerable fever, and on the day following her head was exceedingly inflamed and a great part of it covered with an erysipelatous eruption. In other instances, excessive fear has been known to produce a tremor of twenty years continuance, cataract, loss of speech, palsy, epilepsy and even madness as I myself had an opportunity of seeing at Gottingen. A young man, who was a native of Brunswick, went from Gottingen on a visit to his father. In his way back he was attacked by three soldiers, one of whom seized his horse's bridle and cut him over the hand with his broad sword. He managed to escape however and got safely to Gottingen. He was extremely affected by this accident, and the next day spoke of his uneasiness with considerable vivacity, and complained of a pain in his throat and head. The night following he became quite furious. The third day he seemed to be very uneasy in the morning, but yet he talked sensibly, his head ach was much diminished and his pulse was perfectly natural. Towards night he snatched up his broad sword which he had with him in bed, and aimed a stroke at a lady who sat near him, supposing her to be one of the Brunswick soldiers. Soon after this he became more sensible and seemed to know nothing of what had passed. The night following he had no sleep, but was only slightly delirious, complained of nothing, and sweat pretty copiously. On the fourth day I found his pulse in the natural state, he had no fever, no head ach, and was perfectly tranquil and sensible. The person who sat to take care of him being deceived by

by this calm, left him a little while in the evening to himself: the patient immediately got out of bed and finding a sword in one of the other chambers marched out with it into the street. He threw himself on me and two other friends whom he happened to meet, and it was with difficulty we got him back to his bed with the assistance of some soldiers.

Soon after this he became cool and sensible again, and shed tears, when Baron Brunn related to him in my presence what had passed. He continued in this state all night. The fifth day I found his pulse quicker than usual, and this I attributed to the blisters we had applied. His skin was moist, and he had a blueish circle around his eyes; he was perfectly sensible and composed, complained only of head ach, had a slow pulse, and slept well during the night. On the sixth day I observed symptoms of fever in him for the first time since his illness; he complained of great heat, but continued to be quite sensible: in this state he remained all night. On the seventh day he gaped almost continually from six in the morning till ten, when he had a fainting fit, and complained of *tinnitus aurium*. The night following he slept well, and the next day was perfectly recovered, and continued so during a year, since which time I have heard nothing of him.

Modesty may be considered as a more moderate species of fear. In blushing there seems from a peculiar affection of the nervous system to be an increased determination of blood to the minute capillary vessels of the face and breast, and, as Baron Haller presumes, of the whole skin. He mentions his hav-
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ing seen a young lady whose whole bosom became red in certain circumstances. His conjecture is therefore very probable. I myself have observed a sudden suffusion in the bosoms of women who had a very fair and delicate skin. Modesty, when carried to excess, sometimes occasions the most alarming effects in women. It has sometimes checked the catamenia, and proved fatal. I have it from Baron Haller that a young lady on finding herself taken with the menses in a stage coach was so extremely affected as to bring on a violent fever, of which she died.

Sorrow acts either suddenly or by slow degrees, in proportion to its violence and continuance. Its objects and causes being different according to the degree or suddenness of any misfortune, or its being present, or past, or likely to happen, the effects of this passion will be various. There are not so many examples of fatal effects from grief as from joy, because grief, altho' it diminishes the energy of the nervous system, slackens rather than accelerates the circulation. There are some instances however, of sudden grief having proved fatal. It is related of Diodorus Chronos who was considered as the most subtle logician of the time of Ptolemy-Soter, that Stilbo one day in the presence of the king proposed a question to him, to which he was unable to reply; the king willing to cover him with shame pronounced only one part of his name and called him *αἰς*, *aïs*, instead of Chronos. Diodorus was so much affected at this as to die soon afterwards. Horace was so much grieved at the loss of his friend and patron Mecenas, as to survive him only nine days. Creech who had acquired great reputation by his translation
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of Lucretius, and who was as much disgraced afterwards by the translation he put forth of Horace, was so much affected by his ill success, that he hanged himself in order to avoid the contempt of his countrymen (*n*). I have often wondered that none of our German poets have as yet hanged themselves.

Montaigne tells us of a German, who was killed at the siege of Osen, after having performed wonders in the field ; one of the general officers desired to see the corpse of so gallant a man, and the body being brought before him, he discovered in it the features of his own son, and died on the spot. Dr. Tissot speaks of the father of a numerous family, who having lost a wife, whom he tenderly loved, became suddenly asthmatic. One of our oldest and most uninformed practitioners conceived a fancy that the seat of this patient's disease was in the anus, and gave drastic purges in order to bring down the hemorrhoids. But at the end of two days the patient died, and on opening the body, the lungs were found inflamed, and the heart burst.

It happened not long ago at London, that an Englishman who attended the funeral of his wife, lost the use of all his limbs, and continued speechless for sometime afterwards. Almost in the very

(*n*) Mr. Creech did indeed make away with himself, but not till seventeen years after the publication of his Horace. His death was ascribed at the time to some love affair, or perhaps more properly by Mr. Jacob to his morose and splenetic temper.

moment that I am writing, Prince George Louis of Holstein having lost his wife, directed her corpse to be removed from the coffin in which it was placed, into another of more costly materials; and when this was done, the prince kneeling down at the side of the coffin, desired his Valet de Chambre to read to him some pages of a pious book, melted into tears, and soon afterwards died.

If violent grief is speedy and very fatal in its effects, that which preys more slowly on a feeling mind, is no less dangerous to health. Slow and silent sorrow, gradually undermines the best and most healthy constitution. We every day see instances of incurable diseases, brought on by this cause. Point out to me, said Cicero, a remedy for that kind of grief which carried off the amiable Octavius.

This slow, corroding grief, gradually destroys the energy of the nervous system, the appetite and sleep: occasions indigestion; renders the pulse slow, weak, and commonly unequal; the tone of the heart becoming weakened, the blood is carried slowly through the lungs, and would perhaps stop there, were not its progress accelerated by frequent, involuntary sighs. In the minute vessels of the skin, the circulation is likewise extremely feeble, and hence the paleness and sadness of the complexion. In short, the body and soul in this melancholy state seem reciprocally to prey on each other.

It is usually the stomach that feels the first effects of sorrow. The tone of this organ being weakened,

ed, the rest of the system very soon becomes affected. Indigestion, flatulency, colics, spasmodic affection, the hemorrhoids in men, and in women suppressed catamenia or fluor albus, are the more usual symptoms in these cases. Some subjects are extremely costive, and hence arise many evils; others have a constant diarrhoea from the weakened tone of the viscera, which is no less fatal. The bile too remains as it were stagnant in the liver and gall bladder, and either thickens and forms biliary concretions, or is absorbed and carried back into the general mass, and hence jaundice and dropsy. In these circumstances the whole system becomes extremely irritable, the mind likewise partakes of this sensibility, and men in this state become exceedingly morose and captious.

This same cause is likewise the principal source of hysterical and hypochondriacal affection, especially in people who lead a reclusive and solitary life. This seems to be the reason why these diseases are so frequent in monastic life, in country houses at a distance from towns, and likewise in small towns; men being generally the most troublesome and vexatious to each other, when confined together within a narrow circle where the stock of ideas is consequently small, because the most predominant of these ideas returning with the greatest frequency, at length become dull and insipid, and if they happen to be disagreeable of themselves, they render men morose and unhappy, and never fail to increase diseases of the mind. This is perhaps the chief cause of the uneasy restless disposition that prevails so much in retired life, and in country towns, and

which sometimes precludes all other ideas but those which excite discontent. The ancient philosophers who so often saw men rendered miserable by their own reflections, perhaps were excuseable for asking, with Cicero, whether the Gods could furnish mankind with any thing more likely to render them unhappy, than Reason?

Zuckert, in a very excellent dissertation on the passions, has with great propriety observed that solitude and indolence become in general not only the remote causes of many passions, but are more calculated than any thing else to nourish and support any deeply rooted inclination, and this by confining the mind, as it were, to a circle of certain particular objects.

The uneasiness that is occasioned by an extreme desire to revisit one's native country, is the source of a particular disease named Nostalgia (*o*). This disorder, which announces itself by melancholy, trembling of the limbs, and some other symptoms, sometimes proves fatal in a short time. The Swiss are exceedingly subject to this disease when in a foreign country; and it has been even spoken of as peculiar to that people, but every day's experience proves the natives of every country to be liable to it. Barrere has seen, it in several Burgundy soldiers, who were

(*o*) This affection, which by the French is called *maladie du pays*, is described by Sauvages and Linnæus as a distinct genus, but Vogel and Dr. Cullen have more properly considered it as a species of melancholy.

forced into the service, or refused their dismissal. Dr. Auenbrucker, physician to the Spanish hospital at Vienna, has likewise frequently observed it in young people, who had been enlisted by force, and despaired of ever seeing their home and friends again. These young soldiers were at first silent, languid, pensive, emitted deep sighs, seemed exceedingly sorrowful, and gradually became insensible to every thing. The same physician tells us that this disorder, which was formerly so frequent amongst the Austrian troops, is now extremely rare, since a plan has been adopted of enlisting soldiers only for a certain number of years, and giving them a discharge when that time is expired. I have it from several Scotch physicians and officers, that this disorder is by no means uncommon amongst their countrymen. Indeed, I believe it will be met with in men of every nation, who in foreign countries feel the want of those delights and enjoyments they would meet with amongst their friends at home. In short, every Swiss feels as I do, the *Nostalgia*, under another name, tho' at home, whenever he thinks he should live better in any other country. The *Nostalgia* excites and cherishes the most singular fancies, which no arguments or medicines or even punishment can remove. The only resource is to find out a way to please the patient, but when phthisis has really manifested itself, even this discovery will be of no use. Dr. Auenbrucker observed that in several who died of this disease, the lungs were adherent to the diaphragm; and that some part of the lungs was indurated, or was even become more or less purulent.

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But when the disease has not yet degenerated into phthisis or madness, wonderful effects have been produced in patients, by inspiring them with the hope of soon seeing their friends and their home again.

A Swiss, of the Canton of Berne, who studied physic at Gottingen, fancied that his aorta was about to burst, and therefore could not be prevailed on to stir out of his chamber ; but about this time his father sent for him home, and he then ran all over Gottingen with the greatest joy and alacrity, and took leave of all his acquaintance, whereas two days before this he was hardly able to get up a little stair case without being in danger of suffocation. His father afterwards sent him to the University of Basil, and from thence into the French part of the Canton of Berne, the finest country in Europe, situated along the Lake of Geneva ; here he was again attacked with the Nostalgia : he is now in perfect health.

The febricula described by Manningham, and but little known hitherto, except in England, particularly attacks delicate women, and men of letters of an irritable habit, enervated by grief, or other means. Before the time of this writer, nobody thought of distinguishing this continued fever, from the ordinary hysteric fever or was aware of its dangerous termination.

The paroxysms of this fever, are exceedingly irregular. It manifests itself by a sickly countenance,
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and a dryness of the skin, but without thirst ; a loss of appetite ; a very weak, rapid, and unequal pulse ; pale urine, and sometimes in considerable quantity ; horripilatio ; sometimes cold and viscid sweats ; and in some cases, colic pains, watchfulness, and slight delirium. This fever continues thirty or forty days, according to Manningham, and unless seasonably relieved, terminates in stupor and death.

Indignation seems to be a mixed passion, resulting from anger and sorrow. Its effects in many persons, are to excite vertigo, nausea, and an extreme stricture of the thorax. I have seen this passion, tho' not in a vehement degree, excite a stitch in the side in very delicate women of great sensibility : this pain, like the pleuritic stitch, was renewed at every respiration, and sometimes continued many hours. Baron Haller speaks of a lady of rank, who having suffered herself to be seduced by her lover, conceived so great an indignation after the affair, that she became blind and deaf : her urine was suppressed during four and twenty hours, and her pulse and respiration were, for some little time, so insensible, that even a mirror was applied to her mouth without being tarnished. This lady recovered. I myself have seen an old lady who on the least contradiction felt a sense of suffocation, and a convulsive cough, which would continue a considerable time unless seasonably relieved, and I have generally done this by means of rhubarb and opium.

It

It would seem to be dangerous to check a violent indignation too suddenly. Valerius Maximus tells us that the wife of Naufimenes the Athenian, having surpris'd her son and daughter in an incestuous commerce, became dumb at the sight, and remained so during the rest of her life. A young woman discovered her lover in the arms of her mother, and was seized with madness. A man of distinction, and of great merit both as a general and a politician, having failed in his application for some post of importance at Berne, was so affected with indignation as to die apoplectic an hour afterwards. We sometimes feel the effects of indignation, when with reason and justice clearly on our side, we see ourselves oppress'd or despis'd by those whom we attempt in vain to convince. This is exceedingly grating to a feeling mind, and yet there is nothing more common.

Amongst the melancholy passions we may very properly include love. This acts suddenly and with violence, because of all the passions it is the most impatient, and the least susceptible of controul; sometimes, however, it is more slow in its progress, and like intense grief gradually undermines the constitution. The more general effects of this tender passion are a tremulous pulse, deep sighs, an alternate glow and paleness of the cheeks, dejection, loss of appetite, a faltering speech, cold sweats, and watchfulness, which gradually terminate in consumption, or perhaps occasion insanity. Disappointed love, is generally followed in women by a suppression of the catamenia. I had occasion to observe
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this effect in a Swiss lady, in whom the suppression continued fourteen months. Two other young women in this country, through disappointment in a love affair, fell into the consumption described by Hippocrates, after a sudden suppression of their menses, to which there is commonly joined in these cases, a mixture of timidity and grief. The effects of love have been very well described by Richardson in his *Clarissa*.

Disappointment in love, is likewise occasionally productive of other symptoms. Tulpius tells us of a young Englishman, who having met with a refusal from a lady, became perfectly rigid and motionless, sitting in the same attitude with his eyes open, and appearing rather like a statue than a human being; he continued in this posture till night, and then, on being told that his mistress yielded to his passion, he rose instantly as if from a profound sleep, became more chearful, and soon recovered.

Love, in the female subject, sometimes excites furor uterinus when the passion is irremediable. Avicenna has described the nature of this disorder in a masterly manner. I am convinced from my own observations, that the picture he has given us is truly copied from nature. This disorder, says he, approaches very nearly to melancholy, and is occasioned by a woman's fixing her attention too firmly on the person who is pleasing to her, and with whom she often, but in vain, wishes to cohabit. The eyes in these cases, appear sunk within their cavities, by the constant motion of the eye-lids; the patient's breathing is frequently interrupted; some-

times, on the other hand, it is accelerated; now and then she is merry and laughs, but more commonly mournful and in tears, especially when she hears an amorous song, or is talked to of the absence of the man she loves. Her whole body wastes, except the eyes, which are swelled, notwithstanding their seeming depression, and this seems to be occasioned by the frequent sighs of the patient, and her want of sleep. All the motions of the soul are irregular; the pulse is unequal, and frequently changes, especially when mention is made to the patient of the object of her love. Avicenna, who consulted nature, tells us very honestly, that when all other remedies fail, the physician must endeavor to bring the two persons together; he has seen some instances, he says, of women in this way, who have recovered merely through the presence of the object of their affections, at a time when they appeared to be in a truly consumptive state, and seemingly worn out by the violence of their passion. The conclusion he draws from all this, is the vast influence which the passions have over the body.

Envy exerts its baneful effects on us, even from our cradle. Children are observed to look sickly, and lose their flesh, if they see other children more indulged and caressed than themselves. This passion robs us of our sleep and appetite, and disposes us to fever. A man, who has never cultivated his talents, sees with an envious eye the success of a man of genius; he becomes grave, melancholy, uneasy, and as it were, asthmatic, every time he sees praise or rewards bestowed on others, to which

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he fancies he has a better claim himself. The good name of these persons which he endeavours to depreciate by contempt and calumny, is like a sword suspended over his head by a thread ; he aims at injuring them, and is incessantly retorting the injury on himself ; he never fails to be confused at the appearance of their good fortune, which he generally pictures to himself much greater than it really is, and thus is continually nurturing in his breast, a source of painful distress.

There are many persons in the world who really owe their diseases to this criminal passion, and these diseases are the more dangerous, as their cause is very often unknown, or is discovered only by chance. A man in this state, does not properly reflect on the alteration in his health. Solely occupied with the objects of his passion, and never once thinking of its effects, he would not chuse to acknowledge it, were the cause discovered and pointed out to him. But it would be endless to trace all the combinations and effects of this contemptible passion, or of the ambition which is frequently united with it. I will only say, that physicians ought to be much more attentive than they commonly are, to the effects of this vice, which appears but too frequently every day. The silent, melancholy air we so often see in our patients, and the uneasiness and distress that do so much harm in diseases, very often arise from no other cause than a secret envy, which preys upon the heart, and disturbs all the operations both of the mind and body.

Envy and jealousy are particularly dangerous in love. There is no evil to which jealousy will not give birth. Ambition renders men rash and daring and very often precipitate, but jealousy converts them into furies and madmen. I have had occasion to see all the great hospitals in Paris, and have distinguished in them, three kinds of mad people. The men, who were become so through pride ; the girls, through love ; and the women, through jealousy. All these people had the appearance of so many furies.



C H A P. XII.

Too great application of the Mind, considered as a remote cause of disease.

THE desire of acquiring knowledge, or of employing the knowledge we have already accumulated may very properly be considered amongst the affections of the mind, because in some persons it is so predominant as to absorb almost all the other passions.

Every man who applies himself to the study of truth, has an indisputable claim to the grateful acknowledgements of society; and yet nothing is more common than to see such men despised and neglected, and the preference given to men of no merit, and who make up, perhaps, the greater number in Physic, as well as in every other profession. They were persons of this stamp, whom Horace made to say, *nos numerus sumus et fruges consumere nati*. Men in general do not seem to know or recollect that they owe their present enjoyments, and the advancement of the arts, to the labours of such men as they

they are every day slighting. The savages of Louisiana seem to have a better idea of the utility of these researches to society, than the generality of Europeans. One of these savages took it into his head, to traverse many of the Provinces of South America, with a view to study their manners and customs, and to bring back some useful knowledge to his countrymen the Yazous. In the course of five years, he had travelled nineteen hundred leagues, and at his return, his countrymen gave him the appellation of *Moncacht-Apee*, or *the killer of cares*. Every man who undertakes to enlighten humanity has a claim to the same name.

Rousseau has very well observed, that our Reason perfects itself through the activity of the passions: that we aim at knowing, because we are desirous of enjoying; and that it is impossible to suppose any one who will give himself the trouble to think without being induced to it through fear or desire.

Besides the advantages which society derives from the sciences, as being the true source of the arts; the sciences will be found to afford a real advantage to the individual, in a thousand circumstances. Cicero who knew how to estimate them properly, and who was indebted to them for his elevation to the most distinguished posts of the Roman empire, has in his usual masterly manner, defended all their rights, and pointed out their advantages in his pleadings for Archias. But the great utility of the sciences to individuals, is to give employment to the mind, and thus to keep off the disquietude and vexation which are the constant companions of indolence, and the greatest

greatest enemies, in my opinion, both to the mind and body.

The sciences render life less animal, less confined to the dust we tread on. Every idea being necessarily connected with one or more others, it is impossible for us to acquire a new degree of knowledge, without approaching nearer to that which is beyond it. One acquisition is therefore the source of another, and this is the reason why the mind constantly seeks to extend itself. At the same time that the sciences inform us of a certain number of truths, they spread a sort of twilight on other distant objects, which gradually become more luminous as we advance in our researches. Is it therefore to be wondered at, that an active mind should know no bounds? There is so much satisfaction in acquiring knowledge, that Archimedes, absorbed by this pleasure, did not even perceive the soldier who came to plunge into his breast the sword which ought to have protected him.

But the pleasure we have been speaking of is felt only by much the smaller number. Many people affect to love literature, and to ape the man of science, but few pursue it as a passion; and they who do attach themselves to deep study, expose themselves to a number of ills, if they do it without discretion. The vulgar have indeed no idea how a man, who sits all day reading, thinking, combining, composing, decomposing, investigating, and writing, can exhaust his strength; and this sooner than the peasant who goes to plough or to ditch, and is exposed to all the injuries of the weather; and yet there is nothing more

more certain than this, altho' these people are unable to comprehend it.

Violent and long continued exertions of the mind fatigue the body, as much as excessive bodily labour enervates the mind ; much study, without exercise, weakens the body ; and a laborious life, in which the mind is unemployed, gradually weakens the mind (*p*). This is the reason why the most trifling meditation fatigues the vulgar, and why literary men are unable to support the least degree of bodily labour. The vulgar, whose ideas do not extend beyond instinct, can have no abstracted knowledge, because to abstract there is required both knowledge and genius. Hard labour is what they call working ; and reading, and thinking, and writing, are in their opinion, a life of idleness. We confessedly are not able to say in what manner a violent effort of the mind acts upon the medullary substance of the brain, and through it over the rest of the system ; but as the brain is without doubt the medium of sensation and thought, it may naturally be concluded, that this will be as much weakened and fatigued by too great an application, as the muscles of a workman or a peasant are by handling the hammer or the plough.

It may be presumed, that a certain motion takes place in the parts, through the medium of which

(*p*) Seneca was of opinion, that violent exercise was improper for men of genius. *Nam exercitationes, quarum labor spiritus exhaurit, hominem inhabilem intentioni ac studiis acrioribus reddit.* Epist. 15.

the soul thinks, and by which it executes its functions. It is impossible indeed to say what this motion is, but we need only observe the difference between a penetrating and a stupid brain, to be convinced of the probability of some such motion. In a penetrating head every thing is apparently in agitation. Such a man associates his ideas with extreme rapidity, passes with great readiness from one object to another, discovers at once the affinity of the most distant things, and compares and arranges and combines them with the greatest facility. On the other hand, the little stock of ideas of a stupid head seems to form one indistinct mass; if I may be allowed the expression. Each idea whether true or false when once conceived, is with these people an impression that is deeply engraven on the brain; but without ever being submitted to examination; and these ideas at length become so many barriers which oppose themselves to the admission of any others. Persons of this stamp being but little susceptible of application, content themselves with words, and seem to think and act only with the multitude, or to imitate very awkwardly what they see or hear said by others.

O imitatores servum pecus!

These several phenomena seem therefore to indicate a greater or less degree of mobility in the brain. Pythagoras endeavoured to excite it in his scholars every morning by means of music. This mobility would seem to be founded on the greater or less degree of sensibility in the brain: stupid people having but little or no sensibility, except in matters of interest; in all other things they seem to be without conception. Boerhaave is of opinion that an extreme

mobility of the brain and nerves is essential to genius, but that this mobility cannot take place without weakness, because the solidity that constitutes strength gives too much firmness to the nerves.

This mobility of the brain may become the remote cause of certain diseases when the mind applies itself too intensely on any object. The great happiness is in having the *Mens sana in corpore sano*: but by aiming to procure both these, we may sometimes go too far; because by too scrupulous an attention to the body we may render the mind stupid, or by cultivating the understanding we may necessarily weaken the body. Too great application of the mind, particularly exerts its effects on the stomach, the digestions become depraved, flatulency every day increases, the secretions become irregular and the body no longer takes its suitable nourishment. Happy, says Baglivi, is the physician who distinguishes this, because he will then know the true source of hypochondriacal affection and mesenterical diseases, and likewise of the rank odour of the mouth, and the different bad tastes that affect the tongue.

There likewise results from too great application, a continual tension of the head, a deep melancholy and sometimes a sort of apathy or indifference for every thing. Dr. Tissot, who has naturally a disposition of mind equally removed from joy and sorrow, fell last winter, in the midst of his various avocations, into this indifference and was incapable either of thought or action. The cause of this disorder was in his stomach: his digestion was bad,
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he had alternately either vomitings or a violent diarrhoea, and in the intervals was impatient for all sorts of food. He recovered in about six weeks, but still had a weakness of the stomach. Mr. Moser attributes his ill health to a similar cause.

Celsus observes that almost all men of letters have weak stomachs, and on this account are pale, thin, or dull. Plutarch relates that Cicero ate but little and seldom, on account of the weakness of his stomach, and that he was so thin as to seem to consist only of skin and bones. Voltaire has a triangular face, which is truly the symbol of perfection. Wieland's legs are like a pair of flutes. When Rousseau is not speaking, he leans his head upon his breast, which is a melancholy and contemplative attitude.

In these circumstances, the weakness of the nervous system is constantly accompanied by a greater degree of mobility. This is natural to the generality of literary men, and likewise to hysterical women, and in a recovery from sickness. This is the reason why men of letters are in general so extremely irritable, and so ready to take fire.

The faculties of the mind by too great application gradually become exhausted, and the man of letters sometimes terminates life in the most melancholy manner. The continual watching, which Pliny considered as the means of lengthening out life, kept up a burning heat in his stomach and breast. The celebrated Bayle died a martyr to his unremitting assiduity. Men who have long applied

themselves to deep studies, are sometimes unable to support the light ; sparkling objects seem to float before their eyes in the dark, and even in full day light when they look steadily on any thing. This phenomenon sometimes occurs when they are the most easy and unemployed. Epicurus had so weakened his body by his labours, that towards the latter period of his life, he was unable either to wear any cloaths, or to quit his bed, or to support the light or to look at the fire.

Fontenelle tells us that Tschirnhausen had often seen many of these brilliant sparks floating before his eyes, which disappeared whenever he looked steadily at them ; but that they commonly lasted as long as he continued to work, when he did not attend to them. At length he used to see them in the day time on the walls of his apartment, or even upon white paper. These effects are commonly the consequence of studying by candle light. They are sometimes succeeded by cataract.

I myself experienced this phenomenon last year during the day-time. I saw brilliant sparks, the appearance of flies, black spots, and different figures floating before my eyes, all which appeared and disappeared on a sudden. When I was in bed I sometimes saw the appearance of flame. These phenomena appeared both when fasting, and when I had eat ; drinking wine neither increased nor diminished them. They were first brought on by too much reading ; I am now wholly free from this inconvenience, but dare not venture to study by candle light.
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There are others who are wholly deprived of sleep by dint of studying, and thus precipitate themselves into all the horrors of hypochondriacal affection. I was called not long ago to a lady in the country who was at length become mad after having been long in a profound melancholy. The curate of the parish, who happened to be with her, ascribed her disorder altogether to too much reading. 'It would seem then,' says I to him, 'that you read but little.' 'Very little or not at all', replied the good curate with a very moderate tone of voice, 'take my word for it, Sir, that all they who read much go mad in the end'.

It is indeed true, that our reason and imagination become gradually disturbed by too intense an application to study, and the end of this vain wisdom is sometimes a real madness, or rather as Rousseau says, man returns to his original stupidity. Boerhaave observes, that too great application of the mind causes the brain to fall into atrophy; the eye sight and hearing gradually fail, and at length a man by these means loses all his internal senses and becomes altogether deprived of thought. Van Swieten has frequently seen men of letters gradually lose the faculties of their mind and at length die apoplectic.

A Swiss ecclesiastic who had acquired much reputation by his Sermons, and was desirous to support it, read much, composed with great care, and took the pains to learn his discourses by heart. By this great application of mind he became gradually deprived of his cheerfulness and activity, and his memory diminished in proportion as he continued to
fatigue

fatigue it, till at length it would admit no new ideas, altho' it preserved the old ones. Not long after this he had a stroke of apoplexy, which rendered him paralytic, and he was carried to the baths at Baden in Switzerland, where he died in his forty second year.

But it will be right to consider the efforts of the mind in different points of view: thus there are some who exert their attention, others their imagination, and some again their genius. Altho' men of genius are of all others the most subject to nervous disorders, yet we often see these complaints in people who have no pretensions to genius, and who are sometimes, however, as useful as men of genius. These people hurt themselves by exerting their attention too much.

Weak heads are soon rendered stupid by an overstretch of the attention, because such people embrace but few ideas at a time, and to do this requires the whole of their little genius. The attention of a man of genius on the other hand is sometimes so unlimited as to take in all the ideas of the subject at once.

I knew a Swiss lady of great genius who at the age of fifteen was extremely well versed both in Wolff and Leibnitz, altho' unable to comprehend how a stocking was made. I have seen this lady suddenly attacked with a convulsive cough, or with a considerable degree of fever in the midst of the most animated and agreeable conversation.

Pytha-

Pythagoras who supposed a science to be useful only in proportion as it afforded a remedy to some passion, demonstrates by this the absurdity of converting to a dangerous passion, what ought to be cultivated only to moderate the passions. But these abuses are not peculiar to persons of maturer life, and who enjoy all the powers of their understanding : we see them every day adopted in the education of our youth. Children are made to fill their heads with words, or are severely punished, and by these means become dull, heavy and stupid, because instead of cultivating their reason, their masters seem to aim at fatiguing and weakening their memory by their over exertions. Instead of teaching children to consider and examine a thing, in order to understand it, these masters oblige them to pronounce it fifteen or twenty times with a view to imprint it on their memory. Boerhaave styled this a piteous mode of instruction. Baron Haller observes that the truth of this is but too palpable, because instead of enabling them to analyse a compound idea, and making them feel the due value of the simple ideas it includes, they teach them only the syllables and words that express them, and thus add obstacle after obstacle to the improvement of the understanding.

This absurd method which is so generally adopted, makes all the knowledge of children consist not in the understanding, as it ought to do, but in memory. This seems to be the reason why so many young people who have shone at school, make so diminutive a figure when they launch into the world. As the chief object of their studies was to load their memories with things which as they never understood
were

were soon forgotten, so they find themselves incapable of observing or judging, and in general of thinking, because in their younger days they had never been taught to think for themselves. Baron Van Swieten tells us he has seen children of the most promising dispositions rendered stupid and even epileptic thro' the mismanagement of their masters. These abuses seem to be the most prevalent in public schools, the masters of which too commonly by their caprices and severity serve only to inspire their scholars with terror. I have seen some children so frightened at the least look of their merciless pedagogues, as to become sick and feverish. Amongst others I remember a boy twelve years of age, and of a most promising genius, who was so terrified by the severity of his master as to be attacked with a diarrhoea, which degenerating into dysentery carried him off in spite of every remedy. This same master had five or six hundred strokes of birch to give every week to four animals in order to purge off his bile. This was his own expression.

Persons who are not formed for abstracted ideas, or who apply themselves too intensely to the abstraction of the ideas they employ themselves about, almost all of them fall into the state of a learned man whose case is described by Van Swieten. This person was at length seized with vertigo whenever he simply listened to any little story; and used to faint away whenever he attempted to recollect any thing. I was formerly in a college where philosophy was taught in a very dry and disagreeable manner. Some of the scholars who made the greatest proficiency, and gained the most praise, became altogether stupid,
others

others became ideots, and some few deformed. As to me I was happy enough not to learn any thing. Our professor, who was a very pious well informed man, thought Wolff's writings were too laconic ; he therefore employed the greater part of his time in commenting on and explaining them. In this way his course of metaphysics took him up eight years. This painful application gradually brought on a deep melancholy, tho' before this he had enjoyed a very good state of health, had lived very regularly, and was of a chearful temper. By degrees he lost his strength, became pale and thin, read physical books, took medicines without discretion, and thus weakened himself the more, till at length he was wholly without sleep, and after falling into an insanity which continued a few days, died.

No employment of the mind is so fatiguing as that which is pursued with reluctance or distaste. I have experienced this in my own person. I was intended for the bar, but could never hear the proposal seriously mentioned without being in a cold sweat. A man who reads a book for which he has no taste, or who writes any particular parts of a work with dissatisfaction, gets through them indeed, but not without a certain inconvenience or fatigue of mind. His head grows heavy, he gapes, blows his nose, rubs his forehead, bites his nails, and reads without thinking. This is the reason why we forget so much of what we read, and why we are so often without thinking, or in that state of mind which the English call *Swifts meditation*. It is on the same principles likewise that we may explain why works of genius

are so unequal ; striking and beautiful in some parts, and very different in others.

Of all the occupations of the mind, that in which the genius is creative, as it were, would seem to be the least hurtful, and this on account of the pleasure that accompanies and follows the invention. Sanctorius has therefore very well said, that impassionate study fatigues much sooner than that which is pursued through inclination.

Men fall into different extremes, when the imagination is kept too long on the stretch. Musicians and painters have in all ages been proofs of the extravagances into which an overheated imagination may lead men. Poets have very often been the victims of their enthusiasm.

I think it right in this part of my work, to inform such of my readers as may have had no opportunities of experience in these matters, how extremely powerful and irregular the imagination becomes in matters of religion. Not that I pretend to blame any particular sect or communion, and still less to criticise religion. I mean only to hint at those abuses which merit the attention of a physician. It is melancholy to see so many persons of both sexes affected in this way. Women of a very lively imagination and confined genius are the most commonly susceptible of these impressions. Baron Haller in his *Physiology* tells us that a superstitious piety is a very frequent cause of insanity, especially in such as picture to themselves the most terrible notions of a future state. This idea, accompanied by fear, re-
turns

turns so often and forcibly, as to produce at length the same conviction and certainty as if it had really passed into the mind through the medium of the senses.

These wanderings of the imagination are in a great measure occasioned by the senses. The greater number of these patients being devoted from their earliest life, to a mode of life for which man certainly is not intended, are constrained by their situation to oppose the greatest resistance to senses which acknowledge no other masters than the laws of nature. A body nourished in indolence, and nerves which are the more irritable by being always in constraint, keep up a continual fire, concealed indeed under the embers, but which blazes forth from time to time with the greatest violence. The mind always intent on, and devoured as it were by the appetite of the senses, changes, it is true, the direction of these involuntary and violent motions, but this is done at the expence of reason; and the impetuous orgasm of the senses soon becomes the cause of fanaticism and mania. The greater part of the works published by these disordered minds abound with the most lascivious ideas, wrapped up indeed in a mystical garb, but which sufficiently indicate the nature of the disease. I have often been confirmed in this opinion by the behaviour and conversation of the patients themselves. Thus a lady who was penetrated with these pious ideas, used to call out in her hysteric paroxysms, " My soul
" feels this amiable spirit which inflames every thing,
" which devours every thing by the gentlest fires". Another would be in extacy, immoveable and insensible. She would be penetrated with this holy love,

and a new life would diffuse itself through all her limbs. Sometimes she would call out in her paroxysms, "Come then along with me and let us call love. I can never talk of him enough". These were surely cases of furor uterinus (q).

This pretended spiritual love consumes the body more than if the patients really gave themselves up to the appetite of the senses, because the orgasm which excites it lasts continually. I have observed that many of these unhappy people have become hypochondriacal, hysterical, stupid and even maniac. One patient after raving with this love, and burning with an inward fire, was sometimes attacked with the most painful spasms, and sometimes with stupor, till at length she spit blood, became blind, dumb, and soon afterwards died.—Some have died consumptive, others have become paralytic.

How is a physician to act who is called to a patient in this way, and whose skin he finds perhaps as dry as parchment, as was the case with Bishop Huet's sister, who was so devoted to this mystical love, as to abstain from water and every other liquor. The Bishop tells us that this was the cause of her death. A physician will be an idle spectator unless he is aware of the wanderings of the imagination in these cases. These disorders very often

(q) Dr. Z. gives many other cases in the same way of women penetrated with this mystical love which is so well ridiculed in the New Bath Guide.

make their appearance on a sudden, in persons in whom one would the least expect them. Persons of the best and soundest understanding have not been secure from these misfortunes. A disappointment, a reverse of fortune, an injustice have sometimes given rise to these melancholy effects. They are particularly frequent in courts where women seem disposed to give into these reveries, when they grow old and cease to be admired. It was through a sudden disorder of the imagination, that Swammerdam committed his learned works, which had cost him so much pains, to the flames, and entered into all the wildness of fanaticism.

It is inconceivable how many complaints originate in monastic life, from the religious exercises to which the different orders are subjected. The nuns seem to give into these extravagances much more easily than the men, on account of their greater delicacy and irritability. The effects of these spiritual reflections are a heaviness or dizziness of the head, paleness, weakness, palpitation of the heart, fainting fits; till at length, when the imagination is disordered to a certain degree, all discernment and judgement seem to be at an end, and these unhappy people become, in the true sense of the word, visionaries.

All profound meditation, whether in matters of science or religion, is hurtful to health. The attention which may be considered as the mother of the sciences, relaxes after a certain time in spite of ourselves: the mind relaxes with it and our body becomes weakened at the same time. This relaxation

tion is always succeeded by an extreme irritability. The penetrating Mr. Kloeckhof observes that a mind intent on investigating and comparing and distinguishing uncommon and very complex ideas, and which aims at taking in every thing, and extending the limits of any particular science, at length becomes delicate, distrustful, timid and irascible.

All deep meditation requires the mind to dwell a long time on the object of our inquiries, in order to analyse all its parts, to consider each of these separately, and the affinity they may have to the whole. The mind must not suffer itself to be turned aside from this inquiry by any idea that is foreign to the subject, and this is the reason why such reflections are the frequent guide to melancholy, in which one idea absorbs all the rest. Carneades avoided all publick entertainments, and was inattentive to all the common concerns of life, even to eating, till at length his mistress was obliged to cut the meat into morsels, and put them into his mouth. Plutarch tells us that Archimedes mixed with society only by force as it were. If he was alone, he employed himself in tracing geometrical figures on his fire hearth, and even on his body when it was anointed with oil. Vietus busied with his calculations was so absorbed as to forget to sleep and during three days neither eat nor drank, but seemed insensible to every thing. Varignon was astonished every morning when he was told that the night was past. Sir Isaac Newton fell into a melancholy, which deprived him of all thought; his friends recovered him from this state, only by preventing his sitting alone, and conversing with him on agreeable subjects:

jects. La Caille was always so absorbed in his researches, that he never could say two words in conversation. La Fontaine neither heard nor saw any thing when employed on his great moral truths.

The mind which has a tendency to melancholy, begins by feeling the vivacity I have already described; this is succeeded by a continual watchfulness, and sometimes by pains which are not easily defined. Boerhaave, after having meditated on some particular subject from morning till night, was six weeks without sleep: every thing was indifferent to him: his mind was insensible to every thing: at length he began to feel pains in every part of his body, which he explained by supposing that the vital spirits were returning through their usual channels, in order to be distributed through the body. It is indeed an easy matter to be deceived in the explanation of such obscure subjects; but this idea of Boerhaave seems to me to be the more worthy of attention as I have observed in palsies that succeed apoplexy, that this insupportable pain is sometimes felt in the diseased limbs previous to a change for the better.

Too great application is sometimes fatal to men of learning who are not susceptible of great passions. In my younger days I studied Hebrew under a Swiss professor to whom I may with truth give the epithet of an extraordinary man, not only with respect to his erudition, but likewise his genius and manners, and general character. He spoke almost all the modern languages with the graces peculiar to each; and possessed in a superior degree, the principal

cipal Oriental languages, particularly the Arabic. Every branch of literature seemed to be familiar to him. He was critically versed in the history of all ages and nations ; he was acquainted with their philosophy, their theology, their politics, and never forgot any thing he had once read. This unbounded erudition, was heightened by the most exquisite philosophical genius, which knew how to arrange and combine every idea with precision. In short, his knowledge, his taste, his creative genius, his luminous ideas, the beauty, the clearness, and the elegance of his style, would certainly have entitled him to a place amongst the writers of the first rank ; but he never published any work.

This Swiss divine, who might be said to unite an entire world within himself, had no other passion but the love of study. His constitution was exceedingly robust, and his health unimpaired till within a year before his death. His body was well formed, his face was of a dark complexion and thin, he eat much, and chiefly food of difficult digestion. In the article of drink he was very temperate. A year before his death he began to feel slight defluxions, to which however he did not seem to pay any attention. About six weeks before his death he began to complain of real illness ; he had a little irregular fever, violent head ach, sometimes on one side of his head only, sometimes in every part of it, but which commonly went off in a few hours. He likewise complained of hypochondriacal tensions of the thorax and abdomen, and had no inclination to eat : he had disturbed sleep, and his mind seemed to be sometimes a little absent.

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The physician who was called in, was of opinion that the complaint was seated in the intestines, and recommended an infusion of *carduus benedictus*; but this not succeeding, he had recourse to some gentle purgatives. The patient thought himself better, and undertook to preside at the publick examination of his scholars. The whole assembly remarked that this wonderful man, who had always spoken with so much elegance and precision, became prolix, and even slighty in what he said, tho' he still continued to speak excellent latin. He was therefore persuaded to desist, and go home, as being too ill for business. The moment he got into bed he grew worse. He complained of intense head ach, and was seldom in his proper senses. He spoke but little, and this, contrary to his usual custom, was in latin. He had a feeble, sickly, yellow countenance, and got but little sleep. In these circumstances, his brother was of opinion that the seat of the disease was in the head, and that the physician had mistaken the case. Dr. Itz was therefore called in, a man of great penetration, who had been employed as physician to the Prussian army, by a Prince who does not measure a man's abilities by his beard. This gentleman discovered the seat of the disease. He prescribed strong purges, but without effect; and likewise very stimulating clysters, which were equally inefficacious: at length a cathartic was given, of strength sufficient to purge six ordinary men, and this had a wonderful effect. The disorder diminished considerably. The patient recovered his reason and his senses. Still however, his mind indicated a considerable degree of weakness in the medullary substance.

From that time he took only a dish of chocolate every day, and drank a little of the Weissembourg waters, but was not able as yet to get out of bed. They began now to have hopes of his recovery, but he soon relapsed again into stupidity. Some good woman recommended to him the Halle essence, and this compleatly disordered his senses again. Dr. Ith again advised the use of strong purges, and these had a good effect; he was almost wholly restored to his reason again; his appetite returned, and his evacuations were natural and easy. But soon after this he became wholly deprived of sensibility, and all his functions were confused and at length at an end. He died in his 52d year, after having been an entire week, without affording any one mark of a reasonable being.

Dr. Ith opened the body of this man who had been so uncommon an instance of the extent and depth of the human understanding. He found the cranium very thin, and the brain, with its posterior part, of a most unusual bulk. The vessels of the dura mater, and especially of the Falx, were much distended. Between the dura and pia mater, and between the latter and the tunica arachnoides, Dr. Ith found about two ounces of water; seven or eight ounces in the lateral ventricles; an ounce and a half in the third, and as much in the fourth ventricle. Thus the cause and nature of the disease were plainly demonstrated. It was this accumulation of water that converted the most exquisite genius into an animal, in the true sense of the word.

All these observations prove to us the danger that may arise from too great application of the mind, especially in persons of a retired and inactive life; how simple it is for men to destroy themselves for the sake of immortality; and how much better it is with respect to health to be destined by providence to fell timber in the forest, than to have too much taste for letters. Rousseau praises the invention of him, who on the banks of the Oronoko, pressed the heads of new born children between two boards with a view to flatten and lengthen them, and thus preserve them from genius. If nature, says Rousseau, intended us for health, meditation is contrary to nature; and a man who is absorbed in his reflections is therefore a degenerated animal.



C H A P. XIII.

Of the Observation of many external Things which are not included in the six Non Naturals.

CLOATHING, in civilized countries, is become as it were one of the first wants of men. In general however men dress more with a view to show their cloathing, than to defend themselves from the inclemency of the air. The excessive desire of leaving some part of the body uncovered, is become as it were a right which society seems with one consent to have granted to the women. The ladies, in Louis the XIVth's time, displayed their bare shoulders; many of them now show as much of their arms as possible. In most of the countries of Europe, the ladies, not satisfied with covering their bosoms with a thin gauze, display it without blushing, and without even thinking of the bad consequences that may result to their health from this. In Peru, women dress in such a manner as to discover at every step, what the female of the Orang-Outang conceals with her paw. I am aware that the custom of going with the breast uncovered,

covered, prevents women in general from being affected by the impressions of the air, but there are always some who suffer by it, and I have seen it prove fatal to several. The present system of dress in girls, seems principally calculated to form a fine breast. Their stays are tightly laced below, that the circulation above may be the more free. In some countries the women uncover their bosoms only on days of ceremony, and this is frequently attended with dangerous effects. This custom therefore ought to be wholly prohibited, or the women should be allowed to display their bosoms throughout the year.

But the absurd use of stays seems to have a particular claim to the attention of the physician, because it is evidently productive of many evils. The use of stays seems to have been adapted with a view to give a fine shape, but there is so little truth in this, that in London, where one sees the finest shapes, young girls wear no stays (*r*).

I have sometimes met with delicate women who were obliged to wear stays, in order to give them a proper support, but then their stays were soft and pliant, and moderately laced. Tight lacing in general occasions pains of the stomach, suppression

(*r*) I sincerely wish that this observation were well founded. We seem indeed to have laid aside the custom of tight lacing, in children and very young girls; but the English women in general, are perhaps more tightly laced than those of any other country in Europe.

of

of the menfes, hysterical affection, fainting fits, low spirits, difficult labours, and a variety of other complaints. I never undertake the care of any lady in these complaints without she gives up her stays, or laces them very loosely. Ruffel tells us that the women at Aleppo wear no stays, and this, together with the great use of baths, seems to be the reason why the Syrian women have very easy labours.

Women are in general more attentive to their beauty than their health; I therefore pity them whenever by custom or a religious ceremony, they become obliged to wear a sort of stays that affects at the same time both their beauty and their health. This barbarous custom prevails in many parts of Switzerland, where a woman cannot appear at church without this formidable cuirass. There are some places in which the stays worn by the women render them deformed. In a certain town in Switzerland, in which Rousseau has met with an apologist, the women are obliged, through a pure ceremony of religion, to be harnessed in a machine made of large iron bars, and which is softened by the name of stays. A young lady of that place solicited the magistrates not long ago for leave to appear at church without this cumbersome appendage, which occasioned pains of the stomach and an hysterical affection. The request was granted, but not until a pious and conscientious physician had given in an attestation in favour of the young lady, and the sum of nine hundred guldens (f) had been paid

(f) A gulden is equal to two shillings and sixpence.

into court. This being the usual fee for an exemption which is but very sparingly granted. It is observable that pregnant women who are unable to support this harness, are therefore excluded from the church.

Men in general wear too much cloathing; they aim at securing themselves from cold by this method, whereas it only tends to render them more susceptible of its impressions. We seem to have borrowed from the English, the use of flannel under waistcoats, which were so much and so justly condemned by Cheyne, because they increase the insensible perspiration. Habit, however, is to be chiefly attended to in matters of this sort. Men who have accustomed themselves to go warmly cloathed, ought not to lay aside their winter dress till late in the spring, and resume it again early in the autumn, otherwise in the latter season they will be subject to colds and cough and diarrhoea; and in the spring to inflammations of the breast. We should attend likewise in certain circumstances even to our bed cloaths, and to the change of linen.

Baron Haller has seen a fatal suppression of the lochia brought on, the second day after delivery, by an imprudent change of linen. This might happen through the dampness of the linen, care should therefore be taken to have it well aired and then it may be changed without any inconvenience.

Notwithstanding these reflections, it must be allowed that too scrupulous an attention to a thousand things of this kind would be superfluous. Physicians

cians may preach up the doctrine of health, and lay down precepts for long life, but men will never be persuaded to change their mode of life. Besides, a physician in these matters may be ridiculously minute, and attribute things to causes which have no share in the effects he is considering. This minuteness is sometimes a cloak to ignorance. Thus I know a certain physician who has more reputation than learning, and who by his little talents and chit chat is extremely well calculated to please the women. He can ascertain with great gravity the proper thickness of a glove, or the weight of a fan; or what sort of handkerchief is best for the neck, or what kind of stuff is the best for shoes and to prevent chilblains, or how many pinches of snuff ought to be taken in a day.

The too frequent use of the hot bath is extremely hurtful. Hippocrates has laid down a very good rule, with respect to the heat of the bath, which has been too much overlooked. The hot bath, says he, strengthens, if the natural heat of the body exceeds that of the bath; but it weakens, whenever it exceeds the natural heat of the body.

Prosper Alpini has observed that the Egyptians are as much enervated by the abuse of the hot bath, as by the pleasures of love. As I live within a league of the baths of Habsbourg, which have been long celebrated for their salutary virtues, I have had frequent opportunities of observing the effects of warm bathing, and am full convinced of the truth of the observation I have just now quoted from Hippocrates. I have found them very prejudicial

dicial to weakly, delicate persons, when used too hot, whereas they are exceedingly strengthening when used in the manner prescribed by Hippocrates.

Short, tells us that the cold bath does good only when it is succeeded by a glow of heat and a slight sweat; and that whenever we feel a sensation of coldness after bathing, we ought to abstain from it. This observation seems to be well founded, and is equally applicable to the hot bath.

We may class the smells amongst those external things which occasionally influence the animal economy. Linnæus has perhaps carried this matter too far, yet there can be no doubt but that many smells act in a determinate manner, and on some subjects much sooner than others. It is indisputable that saffron contains a volatile principle which excites involuntary and excessive laughter. The smell of musk occasions faintness in delicate persons, and that of asafœtida has as opposite a quality. The smell of bean flowers, roses and apples, and in general all agreeable smells are hurtful to hypochondriacal and hysterical patients. But there will be many exceptions to this rule.

Ladies of fashion are sometimes shocked at any particular smell, merely because it is too common. What is called good company estimates things only in proportion as they are above the reach of the vulgar. The same smells which occasionally give women the vapours, are likewise sometimes the means of removing them. Formerly, Hungary

water was in great vogue, and the women would never have laid it aside, had there been any truth in the assertion, that Elizabeth, Queen of Hungary, preserved her beauty by it even to her eightieth year. Boerhaave says that many women in Holland lost their smell by the too great use of this water ; and indeed the same thing may happen from the abuse of any kind of perfume.

With respect to some particular smells I am almost in the same predicament with Aristippus. That philosopher loved perfumes, and was therefore constantly abusing the fops who were loaded with them, and who were the occasion of his not using them himself. The superficial reasoners amongst the Greeks, as with us, were too apt to argue a *minore ad majus* ; and from a perfumed coat to the wearer of it.

The external things which may be considered as the remote causes of diseases, are in a much greater number than would at first sight be imagined. I have contented myself with pointing out some of the more striking of them, and a prudent physician will learn to distinguish any other varieties that may occasionally occur.



C H A P. XIV.

Of the state of the body, considered as the remote causes of disease.

BY the remote causes of disease which have their seat in the body itself, we understand every inherent quality of the body, by means of which it may become sick. All the causes we have hitherto described, are of the class of occasional causes. Those which we are now about to mention, are the predisponent causes. It is by means of these that we become susceptible of the impressions of the occasional causes. The best writers on Pathology consider this disposition as consisting in the connexion and cohesion of our solids ; in the quantity and mixture of our fluids ; in the number, the delicacy and complication of vessels of every kind ; in a superficies which affords innumerable pores open in every part ; in a sensibility and considerable mobility ; in that harmony of motion which constitutes the general basis of our functions ; in the correspondence and sympathy of all the active parts of the body ; and finally in the common and invariable laws of union which prevail between the soul and body.

This

This disposition of body, to which I will give the name of constitution, varies in general according to the age, sex and temperament ; and likewise according to certain singularities of nature, who sometimes deviates from her ordinary course.

I shall therefore proceed at once to the consideration of this disposition in individuals, because from these we may be enabled to generalize. And first we shall observe a predisposition to some disorders, more than to others, according to the diversity of age. In infancy, there is a much greater degree of irritability than in more advanced life, and this is the reason why convulsions are so frequent in the diseases of children. The mere acidity which is met with in the stomach and intestines occasions convulsions in infants, tho' in adults it may excite only cardialgia. The greater number of children die with convulsions. The negro children are so extremely irritable, as to be obliged to be shut up in some warm place during the first nine days, because they are infallibly seized with a locked jaw which carries them off, if they are exposed before that time to the fresh air.

Children two years old, besides a general want of strength, have a particular weakness of the stomach and intestines. They eat immoderately, and digest badly ; and this seems to be the reason why a corrupted matter is so easily accumulated in their intestines, and becomes the source of worms and obstructions of the mesentery. Their limbs, which are as yet extremely weak and tender, become rickety ; the blood and humours become depraved and a variety

riety of ills take place, which are with difficulty referred to their true cause. Hætic fevers are amongst the most frequent of these complaints; as are likewise cutaneous diseases, in which I have frequently observed purple spots which afterwards become violet, brown, or yellow, and discharge an acrid ichor, and which give way only to gentle evacuants, and such remedies as restore the digestion.

The cutaneous diseases with which children are attacked, sometimes render them deaf and blind if they are improperly treated. They are likewise subject to tinea, the matter of which, if absorbed and carried back into the system, excites cough and phthisis pulmonalis; and if repelled by any improper applications becomes very often the source of the most violent convulsions, and even death.

Youth are subject to the most violent diseases on account of the increase of their strength, the increased motion of the blood which results from this, and the greater and more extensive play of the passions at this time of life. They do every thing with vehemence and always go too far. Every thing seems to expand itself in them at once, and to tend with precipitation either to vice or virtue; and this is perhaps the reason why their diseases, their vices, and their virtues make so rapid a progress and are so difficult to be checked.

Strength is more particularly felt in manhood, if it has been carefully managed during youth. But there are but few young people who attend to this: The sallies of youth tend to embitter the cup of life,
but

but in general it is only in a more advanced age that they are felt and reflected on. In manhood we become more reasonable, but on this very account we are less disposed to joy. It is at this time of life that hypochondriacal complaints advance very rapidly, and with all the horrors that accompany them; discontent and uneasiness then begin to prey on our minds, and we learn to prefer the hour of death to that of our birth. It is then that we begin to acknowledge that the Thracians had reason on their side for weeping at the birth of a child, and rejoicing at the funeral of their friends. In general we are the most serious when we think the most, and the diminution of joy seems to be in proportion to the number of our years, and is the moral consequence of the perfection of our reason.

In old age, (2) the solids begin to stiffen, and their elasticity of course to diminish; they can therefore no longer exert the same energy on the fluids, and the

(1) "As we approach to old age rigidity begins to be in excess, and the fluids bear a much less proportion to the solids than before. The dissipation of the body is greater than the supply of nourishment; many of the smaller vessels become gradually impervious; and the fibres, losing their moisture and elasticity, appear flaccid and wrinkled. The lillies and the roses disappear, because the blood and the lymph, by which they were produced, can no longer reach the extremities of the capillary vessels of the skin. As these changes take place, the nervous power being proportionably weakened, the irritability and sensibility of the body which were formerly so remarkable are greatly diminished; and in advanced life, the hearing, the eye sight, and all the other senses become gradually impaired". Simmons's *Elements of Anatomy and the animal Oeconomy*. Page 333.

cir.

circulation will of course (u) become inert. This seems to be the reason why acute diseases are so dangerous at this time of life, nature being unable to effect a salutary crisis through organs which are no longer able to obey her. On this account the cure of old people is almost always to be considered rather as the effect of the physicians art than of nature. Chronic diseases are likewise more obstinate in old age than in younger life, and for the same reasons. The physician can therefore entertain but feeble hopes of his patient at this period; especially when worn down by sighs and discontent, an old man drags the load of life with reluctance, and feels only the fordid inclination of avarice, the frivolous regret of the time past, and the horror of an approaching death.

The sexes have likewise their particular diseases, but women are found to have more diseases than men; for if we except the diseases peculiar to the male organs of generation, the women will be found to have all the other disorders, together with a variety of others, to which females are subject, as well on account of the organs which distinguish their sex, as the delicacy of their organization, and mode of life. Their fate is therefore more lamentable than ours; and a physician ought to apply himself in a particular manner to the study of female diseases. These may be distinguished into those of young or

(u) As the fluids become less in proportion to the solids, their acrimony is found to increase; and this may perhaps compensate for the want of fluidity in the blood by diminishing its cohesion.

unmarried women, pregnant women, lying in women, women who give suck, and old women ; and all these, exclusive of the diseases common to the two sexes. The disorders to which the female sex are more generally subject in consequence of the delicacy of their organization, are hysterical affections, melancholy and madness. I hope some day or other to give a work on this subject, founded on my own observations.

Lucian, who was so elegant and ingenious a writer, observes very properly, that women are more subject to diseases than men, on account of the greater weakness and delicacy of their organs ; but above all to madness, because their levity and inconstancy transport them the more readily beyond the bounds of reason.

A peculiarity of temperament will be found to afford the most occasions of being sick. I have already observed, that by temperament, I understand that constitution of the brain and nerves according to which a man feels, thinks and acts, in as much as when left to this, he thinks and acts according as he feels. Thus then temperament will give rise to diseases, in consequence of the different degrees of sensibility and mobility of the brain and nerves, peculiar to each individual. So that a man will be disposed to any particular disease when by the aforesaid sensibility and mobility, the occasional causes are enabled to act with more quickness and energy on his body than on that of another.

It appears therefore how much the power of the occasional causes may vary, according to the greater or less sensibility of temperament. A thick and
humid

humid air immediately enervates persons of great sensibility, whereas a serene and elastic air, as suddenly reanimates them and renders them gay and active. These people perceive in the morning, before they rise what is the temperature of the air. This state of the air is announced in some people by a very agreeable sensation of coldness at the nose. Would it be ridiculous therefore to say, that such persons smell the fine weather? But all temperaments are not equally sensible to this impression of the atmosphere. A man who has but little sensibility or who enjoys good health is equally unaffected by the obscurity, or the thickness, or the humidity of the air, as well by its clearness, dryness and serenity.

I very often draw conclusions as to a man's temperament from his nose. The nerves are so spread there, that the more sensible a man's nose is, the more sensible will be his temperament. Nothing but habit or some singularity of nature, or vice of the imagination, or disease of the nerves can weaken my reasoning in this respect. The subtle Cardan did right to consider an acuteness of smell, as the mark of a penetrating genius and lively imagination, and capable at the same time of supporting them. Baron Haller is not affected by the stench of a cadaver, because he has been so long accustomed to dissection; but I have observed that he distinguishes, at the distance of ten yards, the perspiration of old people which is hardly sensible to any others besides himself. This great man likewise smells the apples that are shut up in his neighbour's house. He detests cheese to such a degree as to have told me one day, at Gottingen, that he had not yet dared to open

some books that were sent to him twelve years before this, in a box which had a green cheese in it. Grose tells us that the Bramins, who altho' they enjoy good health, are extremely delicate and have great sensibility of smell, so as to be much more affected by perfumes than we are: he adds that their taste (*u*) is likewise so exquisite that they chuse the water for their common drink, with the greatest care. Indeed this is a part of their luxury.

The negroes of the Caribbee islands follow a Frenchman by the smell. We are not to suppose that this faculty is given them to make up for the deficiency of reason, because many of them have a great deal of genius. This delicacy of smell is rather to be ascribed to their sober and simple life. There are many instances, in proof of this, of Europeans as well as Negroes, who by a change of regimen have been deprived of the acuteness of their smell. Rousseau has done right to stile smell the sensitive organ of the imagination; because it agitates the brain and nerves more than any other, tho' it exhausts them in the end.

They who have so delicate a nose, and of course so great a sensibility of temperament have likewise a proportionate sensibility at the stomach. This is the reason why great wits become stupid after a full meal, because they find themselves incommoded and even in pain, at a time when a fat Monk feels nought but pleasure and delight. They who invite men of wit to their table, therefore, to enjoy their

(*u*) There is observed to be a remarkable affinity between the smell and the taste.

good qualities, must be careful to feed them moderately.

A Frenchman, possessed of a great share of genius and perfectly well bred, appeared at St. Petersburg, and soon acquired the reputation due to his merit. The empress Anne Iwanowna expressed a desire to see him, and he was accordingly introduced at court. The Frenchman appeared before this princess with all the silent respect due to so much superior rank; the whole court expected with impatience that this man whom they considered as a pure compound of wit should say some clever things; but only two or three indifferent words escaped him. At length the empress herself became impatient and told him to begin. But wit and genius are not always at the command of those who possess them.

Every bodily pain is exceedingly acute to persons of a very delicate temperament, unless long habit has accustomed them to suffering. The soul partakes of the same sensibility in these people, and he who suffers extremely from a slight wound, will suffer equally from a disagreeable idea. This seems to be the reason why all the passions act with greater violence in very sensible people, and even at the expense of their greatness, relatively to their other preeminent qualities. Demosthenes was very thin and delicate in his youth; his mother was therefore unwilling that he should apply himself too much, nor would his masters oblige him to study. Perhaps this very temperament induced him afterwards to throw down his arms in battle and fly.

Cicero was exceedingly timid, not only in war, but even at the sight of a naked sword: he never began to speak in public without evincing at the same time the greatest timidity. He shewed the same weakness at the death of his daughter Tullia, All the philosophers of his time endeavoured to console him, but to no purpose: he even put away his second wife because she appeared to have a certain pleasure in this death.

Helvetius observes, that if cold heads are less subject to these defects, it is because they are but little susceptible of great mobility; they therefore owe their moderation to the weakness of their passions. But notwithstanding the great sensibility of their temperament, there are some persons who are formed for the greatest undertakings, and who brave the greatest danger. Cæsar, a little before his death, said to one of his friends: "What do you think of Cassius? I own he does not please me; for he is very pale". In another moment, Anthony and Dolabella were mentioned to him as concerting something against his interests. "No, no," says he, "I have no fears from such large, and well combed heads, but from those which are thin and pale". Cæsar himself, who as a philosopher, author, politician, general and monarch, has never yet had his equal, was of a weakly temperament, and appeared thin and delicate.

It would seem therefore, that this mobility of the organs, by means of which the body is affected by the slightest impressions, which renders the soul so susceptible of the least and most imperceptible sensations,

fations, which has so much share in the wit, and genius, and taste, and which leads to the greatest enterprizes, when reason presides over the passions: this mobility, I say, predisposes man to a variety of diseases. Men of the best parts are in general the first to suffer from changes of the air, from irregularities in diet and from the passions. Their health, like their virtue, seems to be surrounded by a thousand dangers.

We shall always be the most liable to those diseases which are analogous to our particular temperament. All the occasional causes will affect a very sensible temperament much sooner than any other; but especially such as act immediately on the nervous system. The gout is frequently the lot of men of fine genius, and a lively imagination, who are influenced at the same time by violent passions.

Cæsar was subject to epilepsy, especially on the eve of a battle. Virgil was extremely delicate. Bacon fell into syncope every time the moon was past its full. The Czar Peter was frequently attacked with convulsions. Paschal was constantly surrounded with flames. Pope was subject to the most violent head-ach, and so was Baron Haller at the time he was immortalizing himself by his poems. Barratier, who died so young, and who was such a prodigy of erudition and judgment, was always ailing. A Swiss philosopher twenty six years of age, who is extolled by the greatest wits in Europe without being named, is of a very weakly constitution, and is pale and sickly. The effects of the greater part of the remote causes will depend principally on the temperament.

rament. We ought not therefore to ask whether any particular thing is good in itself; because it may be useful to one person and extremely hurtful to another: its effects can be decided only by experience. By careful and exact observation we arrive at the knowledge of a man's temperament, and by this we may be enabled to judge of the effects any particular cause will excite in him. The theory of temperaments will therefore enable us to foresee the diseases that are likely to take place, and to determine the cause of them when actually present.

Many nations would seem indeed to have each their particular temperament, but to this there will always be many exceptions. Even in a small district there is very often a great variety of temperament. The peasants in my neighbourhood (*w*), especially on the borders of the Austrian territories, are exceedingly stupid, whereas in many parts of the canton of Berne they are ingenious, and some few of them even learned. Their dialect is likewise very soft and consequently very different from that of the Swiss in general, which is very harsh. There are some of these mountaineers who relish the writings of Wolff and Bayle, but amongst these people, it must be confessed, one meets with many visionaries of every kind, as in England. A very sensible ecclesiastic has assured me that he has found the peasants who live along the lake of Thun to be exceedingly stupid, whereas the mountaineers who live as it were over their heads, are full of understanding. The former

(*w*) Dr. Z. resided at Zurich when he wrote this work.

he adds lead a purely animal life, and seem never to think ; whilst the latter read the most fanatical books. Fanaticism is very common in the mountains in Berne.

From these and other observations I am convinced that it would be to no purpose to attempt to give a system of temperaments, because the examples which might be adduced as exceptions to the general rule would be as numerous as those on which the system might be founded.

But there sometimes occur in the natural constitution of the body certain singularities occasioned by a peculiar sensibility of some or all the nerves, in consequence of which a man shall be affected in an extraordinary and unusual manner. This is what physicians have named *idiosyncrasy*. This peculiar constitutional disposition differs from temperament, because it cannot be distinguished by certain signs as is the case with temperament, nor does it so much predispose to particular diseases as to change the nature of those which arise from temperament, though it may create some diversity in their symptoms. This idiosyncrasy is particularly observable in delicate and hysterical women. Baron Haller speaks of a woman to whom the mere touch of any silken stuff, or fish skin was insupportable. I myself know a young lady who is in good health, and has a great deal of good sense, and yet cannot bear the noise of taffetas: she even feels slight spasms every time any body comes too near to her with a gown of this sort. Professor Albinus the younger, used to fall into extreme anxieties at a sound which
had

had no effect on any other besides himself. Mr. Lambert, a very celebrated mathematician, cannot support any persons breath, and this is the reason why he retreats a step or two when any body speaks to him. My friend Dr. Hirzel tells me of a man of genius who feels unheard of pains every time his nails are pared. There are others who cannot bear their faces to be wiped with a sponge without falling into extreme agonies. I know a person who cannot drink any of the rich French or Spanish wines without being incommoded by them, and yet feels no such effect from Burgundy or Champagne. Another person who is a physician, swallows snails, and digests them without any difficulty, and yet cannot eat cauliflowers. There are some people who digest beef easily, but who cannot eat the tenderest bird without being troubled with indigestion. Coffee is an emetic to some subjects. We frequently meet with people who have an unconquerable aversion to some particular smell. Some will be purged by diascordium, and not at all affected by jalap. Boerhaave has seen people swell all over after having eaten a few cherries or gooseberries. The same thing will happen in some persons after swallowing salmon, shell fish, herrings and even the Peruvian bark. Gaubius has seen crabs eyes, the most innocent, one would think, of all substances, produce all the effects of arsenic. Baron Haller has seen violent purging and convulsions brought on by syrup of roses. These and many other examples which might be quoted to the same purpose prove that the most innocent things in appearance may from idiosyncrasy occasionally produce the most alarming effects.

The

The causes of these singularities are without doubt very often inherent in the body ; but at the same time it is incontestable that in many persons they depend on impressions made on the soul by some external agent. Locke has proved that it is by habit we sometimes adopt a particular mode of thinking or acting ; he is of opinion that these habits are nothing more than the consequences of a determined course of the vital spirits, which gradually becomes natural to them by a repetition of the same organic motions that first produced them. A woman may therefore conceive that a smell, a taste, a colour, a word, a thought, or a drug is disagreeable to her, without its being so in reality ; but yet by a frequent return of this idea, a determinate motion at length takes place in the sensorium, which by repetition becomes as it were natural, tho' at first it was really a false and capricious idea. It is easy, however, to distinguish this factitious singularity from that which is truly natural and inherent. I was one day going to prescribe theriaca to a female patient. She had rather die, she said, than take theriaca, to which she had an unconquerable aversion, tho' it came out that she had never tasted it. You are quite in the right of it, said I, madam, you will do well even to avoid the sight of a drug which may have the most dangerous effects. But the same day I ordered a mixture, the principal ingredient of which was theriaca. The next day my patient was better. She continued the use of her mixture, and after her recovery gave me a thousand thanks, for not having given her theriaca, which would infallibly have killed her.

I beg leave to mention in this place, what is indeed another kind of factitious affection, but which is commonly so strengthened into habit, as to be irremediable. A man who imbibes any particular idea in his early youth, is so strongly affected with it, that he never gives it up, even in maturer life, if it has been frequently repeated. In good truth why do we see people so bigotted to some particular error, who are open to conviction in every other respect, and yet are blindly bigotted to this; but that from their infancy they have heard some absurd tale a thousand times repeated, and by these means the idea has been so firmly imprinted in them, that it would be as easy to whiten the *Æthiopian* as to remove their superstition.

The celebrated author of *Tristram Shandy*, one of the most extraordinary books by the bye, that ever has, or perhaps ever will be written, considers the prejudices of education as so many demons, which possess us in our researches. If a writer should be simple enough to give himself up without reserve to their inspirations what would his book be? nothing but a strange mixture of the idle dreams and absurdities of the old women of both sexes.

These same reflections will lead us to understand the particular kind of singularity, which we call antipathy, and which sometimes occasions convulsions and fury. Struck in early infancy with an extreme fear by some particular object, a disposition to the same violent impression continues through life. The passion which possesses a man at the sight, or even the idea of any particular object, is what I call antipathy.

tipathy. Many instances might be quoted in this way, but I will content myself with one of which I was an eye witness. Happening to be in company with some English gentlemen, all of them men of distinction, the conversation fell upon antipathies. Many of the company denied their reality, and considered them as idle stories, but I assured them that they were truly a disease. Mr. William Matthews, son to the governor of Barbadoes, was of my opinion, because he himself had an antipathy to spiders. The rest of the company laughed at him. I undertook to prove to them that this antipathy was really an impression on his soul resulting from the determination of a mechanical effect. Lord John Murray undertook to shape some black wax into the appearance of a spider, with a view to observe whether the antipathy would take place, at the simple figure of the insect. He then withdrew for a moment, and came in again with the wax in his hand, which he kept shut. Mr. Matthews who in other respects was a very amiable and moderate man, immediately conceiving that his friend really had a spider in his hand, clapped his hand to his sword with extreme fury, and running back towards the partition cried out most horribly. All the muscles of his face were swelled, his eyes were rolling in their sockets, and his body was immoveable. We were all exceedingly alarmed, and immediately ran to his assistance, took his sword from him, and assured him that what he had conceived to be a spider was nothing more than a bit of wax, which he might see upon the table.

He remained for sometime in this spasmodic state, but at length he began gradually to recover, and

to deplore the horrible passion, from which he still suffered. His pulse was very strong and quick, and his whole body was covered with a cold sweat : after taking an anodyne draught, he resumed his usual tranquility.

We are not to wonder at this antipathy. The spiders at Barbadoes are very large, and of an hideous figure. Mr. Matthews was born there, and his antipathy was therefore to be accounted for. Some of the company undertook to make a little waxen spider in his presence. He saw this done with great tranquility, but he could not be persuaded to touch it ; tho' he was by no means a timorous man in other respects. Nor would he follow my advice, to endeavour to conquer this antipathy, by first drawing parts of spiders of different sorts, and after a time, whole spiders, till at length he might be able to look at portions of real spiders, and thus gradually accustoms himself to whole ones, at first dead ones, and then living ones. If it had been any way possible to overcome this antipathy, I think such a method would have been the most likely to have succeeded.

I shall now mention some of the remote causes of disease which are owing to a vicious constitution, or mal-conformation of the body. These defects may be either wholly concealed, or only partly so, or they may be manifest. We may consider an hereditary disposition to certain diseases, as belonging to the first of these classes. The intemperance and luxury of the times are the reasons why our children bring with them into the world the seeds of diseases, and are so weakly and delicate. The tenia
or

or long tape worm, which is so frequent in children in Spain and France, and in the French part of Switzerland, seems to be occasioned by the irregularity of their parents. Nor are our towns in Switzerland more free from libertinism than other places. If children do not really bring the lues with them into the world, yet we may be assured that men who are enervated by disease, and mismanagement, will be able to give life only to a puny offspring. The venereal virus may for a long time circulate in the mother's veins without manifesting itself by any determinate signs or symptoms. But the children who are born of such parents are subject to tinea, cuticular eruptions, and ulcerations; and sometimes, to diseases which do not manifest themselves until the age of puberty, or even later. Dr. Raulin gives us a striking example of these hereditary diseases.

Boerhaave is of opinion that those children are the most subject to rickets, who are born of relaxed and indolent parents who feed much on fat and delicate meats, drink much wine and tepid liquors, or are worn out by excessive venery, diseases, and more especially if those diseases have been venereal.

An hereditary disposition to diseases, both of the body and mind, is sometimes of singular activity, perpetuates itself through several generations, sometimes remains dormant during many years, and then again appears on a sudden. Linnæus, tells us of a man who was freed from a disposition to colic, by matrimony, but that he transmitted this complaint to two of his children to whom it proved fatal. Gaubius relates, after Donatus, a fact mentioned
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by Boethius, in his history of Scotland, of a scotch girl who preserved a decisive taste for human flesh, a crime for which her father and mother had been burnt, when she was only a year old.

Other constitutional defects are concealed only in part. Of this class is a vicious state of the solids, which tho' perhaps, not yet truly amounting to disease, will at length become such, either of itself, or by necessary causes.

It is proved by repeated observations that in many individuals it may happen that one part is stronger than another, and a careful attention will easily lead us to distinguish it. Thus I have remarked that they who have weak eyes have a deep redness around those organs after any violent emotion. A similar cause will excite tooth ach in those who have bad teeth; or a cough, or oppression in such as have a weak breast; inclination to vomit, or a painful cramp in those who have a weak stomach; or colic, and diarrhoea in such as have a weakness of the intestines; others who have a great weakness of the bladder, feel painful spasms or discharge much urine on such occasions. All these symptoms come on suddenly. Women who are constantly incommoded with fluor albus, feel after any sudden emotions a pain in the loins. They who have been long subject to gouty pains will experience a return of them; or such as are subject to convulsions, will have an universal tremor whenever they are suddenly agitated. All these observations prove that the weaker part of the system, is that on which the effects of each of these emotions are principally exerted. It will

will be on this same part likewise that the occasional causes of diseases will in general operate first and more particularly. It has also been very judiciously remarked, that this weaker part is very often that to which all the other ills of the habit are attracted. Our fluids are known to be determined in the greatest proportion to those parts of the body where they meet with the least resistance. This is perhaps the chief source of tophi, and steatomatous and other tumours which occasionally originate in the body. Boerrhaave observes that a tophus is very easily formed in weak and delicate lungs, if such persons cool themselves on a sudden after being over heated, and that the patients are at length carried off by a violent hemoptoe, of which this concretion is the cause. He is of opinion likewise, that in diseases of this sort, we may in general presume a similar concretion in the lungs, when the patient has a dry cough. The eyes are found to suffer more from excessive venery, than the organs that are actually employed in it. A weak stomach often destroys the energy both of the body and mind.

The whole nervous system is sometimes extremely weak; and this is either from a natural disposition or is brought on through different kinds of excess. They who are born with a weakly nervous system, have small bones, feeble limbs, and soft flesh, they are likewise in general of a pale complexion, and have only a transitory bloom on their countenance. They are very soon fatigued, and have a weak pulse. Their soul is extremely sensible, and easily agitated, and they seem to be the more exposed to diseases, as they fear them the more. I know a Swiss gentleman,

tleman, of very respectable talents, who has been hypochondriacal ever since he was six years old, and this through the extreme weakness of his nerves. I have likewise observed all the little symptoms of hysterical affection in girls of six or eight years of age; and this not from worms, but from the weakness of their nervous systems.

There are others who weaken the tone of their nerves by every kind of excess. The most robust people are often of this number, from an unhappy notion that their strength of constitution secures them from danger. Intemperance, both in eating and drinking, seems to be a kind of war, which the generality of men are continually carrying on against their nerves.

The venereal appetite is very often stimulated by intemperance in regimen; and excessive venery is another great source of debility, and hurries men on to a premature old age. In this part of Switzerland, which in the opinion of Voltaire is the seat of sound philosophy, this debility is not so much the effect of intemperance in eating and drinking, as of a vice which unfortunately is but too prevalent here, as well as in every other country of Europe, at an age when even the destination of the sexes ought not to be known.

Our modern Epicureans, who pride themselves in their indolence and luxury, seem not to consider that in the system of Epicurus, pleasure, was what it really is in nature, a real good; and pain, a real evil. Nature directs us to the pursuit after pleasure, only
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so far as it is innocent and not productive of pain ; and this was the aim of Epicurus, whose morality was the most severe of any the antient philosophers, as has been proved by the most ingenious writers. Horace in mature age, adopted this system, and as he tells us, returned now and then to that of Aristippus to unbend his brow : *Nunc in Aristippi furtim præcepta relabor.*

Modern voluptuousness is the source of an infinite number of ills which are every day destructive to health and population. Persons enervated by indolence and luxury, are brought into danger by a degree of sickness, which would hardly affect a man of firm and healthy stamina ; the physician will do well to attend to this, because the disorders of these people have almost all of them some peculiarity different from the true and ordinary character of the disease itself. I have observed that these people die in a very tranquil manner : life is extinguished in them like the flame of a lamp, and this at a time perhaps, when we should think them out of danger, were we to judge of their diseases without taking the constitution of the patient into the account.

Voluptuousness does indeed not always prove immediately fatal ; its more general effects are to promote hypochondriacal and hysterical affection and melancholy. In this state, worn out with discontent, and with ills both real and imaginary, the patients seem to become so many furies destined to torment all those who are near them. Dr. Thierry, who was physician to the pretender at Rome, styles these patients the plague of physic.

Both these and literary men will in general be more susceptible, than others, of epidemical diseases, which commonly attack the most enervated first, and to these they likewise prove the most fatal. People who live luxuriously, and at their ease, become filled with unhealthy juices. Boerhaave tells us that diseases, and especially acute fevers, are the most fatal to fat people, because the increased heat melts down the fat, which by its rancidity irritates the solids, and thus increases the danger.

I likewise include amongst the manifest defects, which render us more susceptible of impression from the occasional causes, those changes in the disposition both of the mind and body which are the effects of former diseases. Thus a person who has been afflicted with a convulsive disorder, will feel a return of it on the least occasion. They who have been attacked with inflammation of the breast, ought carefully to guard against a relapse, which is easily brought on. An incomplete apoplexy, from the impression it leaves on the origin of the nerves, is almost always a prelude to complete apoplexy. A slight dropsy, tho' cured, leaves such a disposition in the part affected, as to bring on the complaint again, whenever the secretions are in the least disordered.

But a disorder that is apparently well cured, often gives rise to a very different complaint. Hydrothorax is sometimes an immediate follower of inflammation of the breast; but in many patients, this secondary disease does not manifest itself till many years afterwards, tho' its cause is the same. I have
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seen a woman cured to all appearance of jaundice, continue free from complaint during twelve years, and at the end of that time die dropical. A man thirty two years of age, who during eleven years had been subject to epilepsy, had no return of his fits during eleven months, but at the end of that time died apoplectic. These examples, together with many others which present themselves every day in practice, prove how much attention is required to investigate the internal and external causes of diseases.

Diseases will likewise sometimes alter the temperament. Aristotle long ago pointed out the possibility of such a change by means of age, regimen, habit, or education. A lady of the first distinction in our Cantons, told me, in her seventieth year, that till her twenty fifth, she had always been exceedingly delicate. But that about that time she fell into a profound melancholy, which continued a year, when she got well again, after taking a great variety of drugs; but that since that time she has had so constant a tranquility of mind, as to be unable to shed a tear even in the midst of the greatest adversity. This old lady was as gay and alert as some girls are at twenty.

But if there are some diseases which diminish the sensibility of temperament, there are others which increase it. Diseases act sometimes upon the mind, sometimes upon the passions, and always upon some faculty which depends on the organization which determines the several senses, the sentiments, the inclinations, and the passions.

The rickets, in general, expand and accelerate children's understanding, but not invariably. I have seen the most amiable children, become cross and unmanageable from worm complaints, or obstructions of the mesentery. The most modest and the gentlest girls have become perfect furies through a suppression of the menses. A man of a very tractable character, and who had always been fond of his wife, had his temper so much changed by a malignant fever, that during many months he never spoke to her, but in rebuke: even his friends could not speak to him without giving offence.

The imagination may have been so struck with a former disease, as to be in continual apprehension of not being cured, or at least to fancy that some reliques of the complaint are still existing. This has been particularly remarked in persons who have been cured of the venereal disease and who are so frequently fancying they have some fatal remains of the virus in their constitution. This is the reason why physicians find it more difficult to cure imaginary than real ills.

I remember a very devout man, who in a moment of gallantry contracted the lues. He was properly treated and cured, but never fancied himself quite free from the taint. This notion even prevented his marrying. At length he consulted me, and finding his health and constitution unhurt, I indulged him with a few mercurial frictions merely to cure his imagination. At the end of a few weeks, he

he informed me that every thing was in good order: that is, his imagination was cured.

These examples will suffice, I believe, to prove how the remote causes find in the age, sex, temperament, certain singularities of nature, or a defective state of the body and mind, a matter which when combined with them is capable of producing every sort of disease.



C H A P. XV.

Of the Tendency of Nature to preserve Health.

WE have pointed out in the preceding chapters, a multitude of causes which are occasionally destructive to health, and there now remains for us to inquire by what power or principle man is enabled to ward off these various sources of disease to some or more of which he is every day exposed both from the nature of things and his own misconduct. We shall find this principle within the body itself. Nature, who is constantly attentive to the preservation of her own productions, seems sometimes to exert singular efforts, and to find within herself, resources, which neither the genius nor the industry of man would be able to discover.

The powers, which man is enabled to oppose to the action of these causes, are to be sought for in the separation of parts in general; in the re-union and consolidation of those which have been torn or broken; in the separation of the diseased parts from the sound, and in suppuration; in the excretion of what is noxious, whether it be by the ordinary secretions

cretions or through any extraordinary channel ; sometimes in fever ; in the consent of parts ; in the regimen of life ; in the temperament ; in custom ; and in fine, in the influence of the soul over the body.

Sometimes the effects of external things are hurtful only in particular circumstances ; or rather the greater number of causes which act upon the body may be considered as having only relative effects. Hard aliment would be improper for a sedentary man, whereas it may be very necessary for another who uses much exercise. Labouring men require strong food, and in abundance. It is observable however, that a man whose business requires him to use much exercise, will digest much better than another who exercises himself merely for the sake of health. In the former, both the body and mind seem to be employed, whereas in the latter, the mind is intent on one object. I have often seen hypochondriacal patients extremely fatigued after any involuntary exercise which they took merely for the sake of motion, and who constantly found themselves much better after any manual employment which their affairs might require of them.

Excess of diet may therefore contribute to the health of a workman, a peasant, or a soldier ; or rather no one is incommoded but he who eats or drinks more than he can digest. One man shall be intoxicated by half a pint of wine, whilst another shall be able to drink three times that quantity without inconvenience. It will be better however, to be moderate, and not to go quite to the extent of our abilities

abilities in this respect. Intemperance may sometimes have its use ; because the body suffers less from the varied effects of different causes, than from the effects of a single cause which operates uniformly and continually. It is unhealthy to be always sober, because too great a uniformity of life renders us extremely susceptible of the least change. Horace thought it pleasing to be a little mirthful, and even foolish upon occasion : nor can I blame his maxim, when this occasion is an agreeable one, and not too frequently repeated.

Aristotle considered health as the result of a habit of mediocrity. But Plato's opinion here was preferable to Aristotle's ; and this was, that in order to preserve health, the body ought never to be exercised without the mind, nor the mind without the body, that the necessary equilibrium might be duly kept up. Plato therefore recommended it to all those who studied the mathematics, or any other science, to use as much bodily exercise as possible, and to amuse themselves with the muses and philosophy not in the way of study but of relaxation. Boerhaave used to give a similar advice to his followers. 'The greater your desire is to be instructed, says he, the more will your health be affected, and especially if your studies are directed solely to one science. You must never confine yourselves long to one object, if you wish to avoid melancholy. Endeavour to vary your labours, and to employ yourselves occasionally on subjects of a very opposite nature. If you cultivate the mathematics, for instance, amuse yourselves now and then with poetry or music, and by these means you will keep up the necessary equilibrium

equilibrium between your intellectual and bodily faculties.

It is because I have followed this salutary advice, and amused myself with the writing a few trifles, that envy and calumny have held me forth as an ideot, wholly ignorant of the profession I have adopted. But it is to the observation of these precepts that I owe my health. Altho' our days may be counted by the *Tien*, or Supreme Being, as is observed by the author of the book Tchang-Seng, yet I believe it very reasonable to suppose that their duration depends on ourselves.

Many effects, that are in themselves dangerous, are rendered innocent by habit. In the physical, as in the moral world, the most disagreeable things become supportable by dint of seeing and feeling them. A Swiss before he has been six months in France, is converted, from a very uncouth and inelegant being, into the most ridiculous fop.

It would seem likewise that with respect to the body, habit determines the sensibility of all its parts. The education of the Spartans was founded on this principle. The Greeks were extremely attentive to bodily exercise and knew how to form the minds of their children to virtue by the same rules. Even the stupid Laplanders seem to be acquainted with this law of Nature: they shut up their children in little cradles and suspending them in their huts, amidst the smoke, swing them with cords.

I can prove by many examples, that by habit we may become reconciled to things which are, as it were so many remote causes of diseases. I observe many of our peasants go with their bosoms naked in the coldest winter, whilst their children run barefooted in the snow. A worthy ecclesiastic in my neighbourhood has seen children sliding barefooted on the ice. Addison tells us, that the inhabitants of Nova Zembla go barefooted without complaining of the rigorous cold of their climate. Boerhaave, however, has seen an incurable palsy brought on in the most robust people by lying down in the night on wet grass, and yet we see our Swiss peasants do this every day without inconvenience, and this merely from habit.

Habit has likewise wonderful effects with respect to our food. I know many people who have adopted a particular regimen, and which is become necessary to them, altho' it be hurtful perhaps to others. In Peru and at Batavia, pork has the reputation of being a very healthy food; and this is probably more the effect of habit than of any particular nature of the hogs of those countries. Almost in every part of India, *asafetida* is used as a seasoning in cookery: I myself sometimes chew it in order to rouse my spirits, and it is to me a real luxury.

Lancisi tells us that the Mexicans eat, without any inconvenience, the eggs of the insects, the fish, and even the filth of marshy places.

Aliment

Aliment that is difficult of digestion sometimes becomes innocent through habit. We see many people who with very weak stomachs, are able to digest beef and brown bread. Hippocrates, therefore, did right to observe, that heavy, hard and indigestible food does not incommode even weak stomachs that are used to it. I know a Swiss officer who always pays for two at every tavern, and is in very good health. Such instances are not unfrequent in Switzerland. Bishop Burnet has described the gluttony of our Cantons such as it really is. I cannot reflect without horror on the immense quantity of food that some of our Swiss gentlemen devour at a breakfast. An Hessian officer who was born at Franckfort on the Mayne, and who studied in the University of Erlangen, used to dine every day at two different taverns, and pay at each of them for two; between his two meals, he used to devour six pounds of bread, and as many little cheeses. He was a tall, well made man, eighteen years of age, and was in perfect health.

Bacon tells us that physicians seem to have insisted too much on sobriety; it appearing that gluttony, when become habitual, proves a better support to health than the so much vaunted sobriety, which only tends to render nature inactive, and incapable of any extraordinary effort or of supporting abstinence. It is certain that a body that is well fed will support fasting, and even some diseases, with much less inconvenience than another that is supplied as it were, only for the moment.

But here is a fact which proves to what degree the body may accommodate itself to every change. An ecclesiastic, who was a very amiable man, happened to be one day of a party where they eat and drank to excess, and there he fuddled himself after eating immoderately. He was so vexed at this, that the next day he resolved to leave off meat and wine and pulse; and to live wholly on bread and water and fruit. He was fifty years old when he adopted this plan, and he continued it a long time, and enjoyed the best health, eating two pounds of bread, with two bottles of water, and three or four apples, every day (x). I will allow that such changes in regimen may in many subjects be productive of bad effects, but these will depend on circumstances.

One might be led to think likewise, that spirituous liquors are less noxious when drank habitually, but

(x) Sir George Baker has related the case of a Miller, at Billericay in Essex, whose diet for many years past has been confined to a pudding made of sea-biscuit and milk; and who abstains wholly from drink, not having tasted even water since the year 1766. This diet he adopted on a sudden, in his 45th year; and from being a very corpulent man, and in a very bad state of health, has reduced himself to a moderate size, takes but little sleep, uses a great deal of exercise, and to use his own expression, is metamorphosed from the condition of an unhealthy decrepid old man, to perfect health, and to the vigour and activity of youth, though he is now approaching to his 60th year. His pulse beats from 44 to 47 strokes in a minute, and he makes every day about a pint and an half of urine which is of a full amber colour. It is remarkable that he never suffers his hogs to drink, and to this he attributes the excellency of his pork, which is greatly valued on account of the whiteness and firmness of the flesh. See *Med. Trans.* Vol. II.

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this seems to depend more on climate than habit, as we have already remarked in our chapter on drink.

By habit, men reconcile themselves to opium, which, even in a small dose, will in general prove fatal to those who are not accustomed to it. There is hardly a Turkish Janizary who does not take his two drachms of opium every day. I know a Swiss advocate who does the same thing every day without any inconvenience.

Of all the rules of health, those which prescribe exercise seem to be the most indispensable. And yet we see whole nations habituated to indolence and inactivity. The *Vettones*, or ancient inhabitants of the country of Salamanca, were so accustomed to a sitting posture, that they were surprized to see the Roman officers who came amongst them walking and exercising themselves. The same thing happened to the French at Madagascar. The Turks are so attached to their sophas, that they are astonished to hear people talk of walking to any place for the mere pleasure of coming back again, and yet La Motraye tells us, that he never saw any nation less subject to diseases than the Turks, and that many of them live more than a century. Their regular mode of life, and the simplicity of their diet contribute not a little to their longevity.

The passions, which are in themselves so fatal to many persons, are sometimes a principle of health in others. There are choleric people who give vent to their passion on the most trifling occasions, and

and who are rendered more vigorous and active by it.

I knew at Paris, the Abbè Sambrano, who was a very learned, ingenious, and eloquent man. This man could do nothing without the most violent exertions. Even in common conversation he had the most singular grimaces, rolled his eyes, moved his arms and shoulders, stamped with his feet, and in short was so agitated that I am sure it would have been impossible for me to have imitated him for a quarter of an hour without losing all my strength. And yet the Abbè was never better than when he had talked to me in this manner, at the Thuilleries, several hours together.

Habit will likewise determine the effects of many external things. The same odour which revives a Sultaneſs, would be detestable to an European. The Siameſe are as fond of rotten eggs as the Swiſs are of rotten cheeſe. In ſome parts of America they chew the bark of the *palma chriſti*, which is very acrid and corroſive. The ladies in Peru are never without the *limpion*, or roll of tobacco, in their mouths.

The moſt delicate women go with their boſoms expoſed in the coldeſt winter, and yet the hardieſt men, who are accuſtomed to be well cloathed, would be unable to do this without danger.

The ancients, who went bare headed, were ſeldom ſubject to colds, head ach, pains of the teeth, &c. with which we are, perhaps, the more frequently attacked,

attacked, because we are more careful to cover our heads. Helmont the younger, even in advanced life, used to wash his head every day under the pump, and was never subject either to colds or head ach. Locke advised the washing children's feet every morning with cold water. I have observed in Switzerland, the good effects of washing our children with cold water. The most delicate are soon reconciled to it. This method begins now to be adopted in France, and other countries. There are some persons who oppose themselves to it from a mistaken notion, that it renders children yellow, pale and sickly. There are many countries where children are plunged into cold water the moment they are born, and this method, by being repeated, renders them robust and healthy, and fits them to roll in the snow when they grow older.

Habit will likewise diminish the energy of some contagious diseases. This led Hippocrates to say that what is disease at one time may not be so at another. The negroes from the coast of Guinea, have brought with them to Guardaloupe and Jamaica a very bad species of leprosy, which seems to be the true Elephantiasis. This disease is communicated by the venereal commerce, and likewise by living or being frequently with the infected. The disorder is likewise hereditary. And yet there are many men who remain free from taint notwithstanding their connexions with infected women; and many women admit the embraces of leprous men without gaining the disease. Doctor Peyssonnel who has given a good account of this disease, concludes that a person must have a certain predisposition

disposition of body to receive the infection, and that it may be possible to accustom ourselves to contagion as we do to poisons. We see many unhealthy countries in which men live nevertheless to a great age. Mr. Wargentin has proved in the Stockholm Memoirs, that men live as long in Holland and Sweden, as in France and England.

Even Valetudinarians sometimes live to a great age. Women in general live longer than men, and this is attributed by Boerhaave to the greater feebleness of their structure. There are many women who are always sick, and yet live to be very old, amidst infirmities which would destroy the strongest man. We likewise see similar instances in men. The lives of all these people would be insupportable were not their pains softened by habit. I have often observed, that persons who have been accustomed to sickness, support their pains much better than those who have constantly enjoyed good health.

I shall prove in another work, that by long habit even the best medicines become inefficacious, which appears less wonderful when we consider that men may accustom themselves even to poisons. The Encyclopedists tell us, however, that we are not to believe that Mithridates accustomed himself to poisons, because in their opinion, a man can no more accustom himself to these than to the stab of a poignard. They tell us that the Czar Peter ordered that all the children of sea-faring people should be accustomed to drink sea water; but that all who drank, died. There are many exceptions to be made to the reflections of these gentlemen. Schaarf-
schmidt

chmidt observes that we may accustom ourselves even to arsenic. Galen said the same thing of the cicuta, and Linnæus of the aconitum. And yet there can be no doubt but that the water hemlock, stramonium, henbane and aconitum are true poisons, notwithstanding the useful application of them by Dr. Storck in the cure of many dangerous chronic diseases (y), by beginning with very small doses, and gradually augmenting them to a certain degree. All that I mean to conclude from the observations I have delivered on habit, is, that every thing is apparently, not equally useful or noxious to every individual. Thus one man shall accustom himself to sleep only a few hours, whereas another through habit shall require twice as much. The affinity or the repugnance we observe between our bodies and the external causes, extend only to a certain degree; this essential point can be determined only by experience. But we ought to be very cautious how we generalize from individual observations, however numerous they may be, or how we argue in particular cases from general systems.

The innate powers of temperament will sometimes render the most unhealthy things innocent, in certain circumstances. The pores are always open in strong and healthy people, and even in cold and damp weather; they are then closed only in weak subjects. A Swiss who considers himself to

(y) All medicines are poisons, but all poisons are not medicines.

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be of a very weak temperament, was attacked in the month of November with a catarrhal fever which was at that time epidemic in Switzerland. He got up in the middle of the night with a great degree of fever, and sought for water to quench his thirst; but finding none in the house he ran down into the street barefooted, drank heartily at a neighbouring fountain, and then filling his jug with water, went home and emptied it before he got into bed again. The next morning his fever had left him. The Russians are so hardy, that after sweating in a hot bath, they go immediately, even in the midst of winter, and roll in the snow.

A soul, which has a certain empire over the body it animates, may likewise be of infinite use in preserving life and health. This empire of the soul is by no means a chimæra; I have seen many instances of the happy effects of a fortitude of mind founded on solid reflections. A young woman at Berne had so great a fear of thunder, that on the least appearance of a storm she used to hide herself in the cellar. She was one day in a numerous company in the very moment when a storm happened; and immediately ran home to her cellar, but before she could get within doors, the lightning fell close beside her. This event recalled her to herself. She immediately made the most serious reflections, and being convinced that it is impossible to elude the arm of the Almighty, she now sees the most terrible thunder storms with tranquility. A lady at Zurich, had the same weakness, till the lightning fell one day in the room in
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which she was sitting. This led her to similar reflections, and freed her from her fears.

But another thing which is still more singular and yet equally true, is the power which the soul exercises over the body, by means of some sudden and extraordinary emotion. Valleriola speaks of a man, who had been many years confined to his bed, and deprived of the use of his limbs, and yet on being told that the house was on fire, suddenly recovered his strength, and has preserved the use of his limbs ever since (z). Pechlin tells us that one of his friends was suddenly cured of an obstinate tertian by being in danger of shipwreck.

All these observations prove the natural powers which man himself possesses, and by means of which, he may prevent the ill effects of a great variety of causes, which of themselves have a tendency to destroy life and health; and to these causes he is every moment exposed both in the air he breathes, and in the food he takes in for his support. We

(z) Dr. Musgrave tells us he knew a gentleman, (and it would be easy to add many similar examples) whose feet were so crippled with the gout as to make it necessary for him to be carried on a servant's back. In that posture he was going up stairs, when an account was brought him from above, that his wife was fallen into a fit. Upon which he immediately got down from the servant's back ran up stairs without difficulty and by his own strength lifted his wife off from the bed where she lay. Another person, a lady, was cured of a marasmus, when supposed by Dr. Huxham to be at the point of death, by a sudden alarm of fire.

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are therefore not to think it strange, that Tiberius should be of opinion, that a man, who at thirty years of age is incapable of being his own physician is unworthy of life. Rousseau who is always sickly, unless he takes a great deal of exercise, despises both physicians and physic: and his reason for this will, perhaps be found in what we have just now said.



THE END.



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